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Original Articles

ADHESIONS OF THE PELVIC COLON.*

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The purpose of this paper is to bring to your attention certain considerations relating to the function of the pelvic colon and the significance of adhesions of that region. Gynecologists must deal with the pelvic colon along with the other pelvic organs, taking their relations into account in estimating the importance of signs and symptoms of pelvic disease.

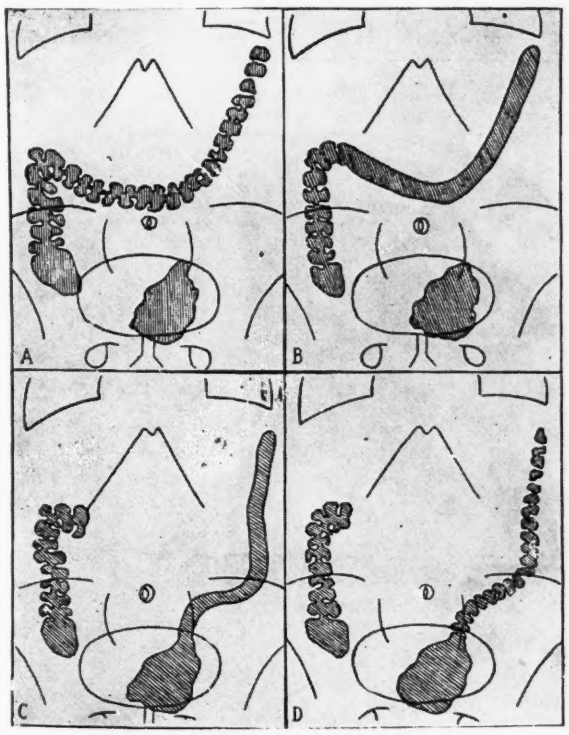

Fig. 1. Four drawings (after Holzknecht) illustrating the "mass" peristaltic movement. In A the colon is uniformly filled from cecum to splenic flexure and the indentations due to the haustral contractions are nicely seen. In B these haustral markings have disappeared from the hepatic flexure on. In C, a few seconds later, the content of the transverse colon has moved over into the descending and iliac colon, the haustral markings not yet having appeared. After some minutes, fifteen or twenty, the haustral markings are reappearing.

The shape and position of the colon deserve at present comparatively little attention—less than is usually accorded to them. Comparative studies on the identical patient under the identical circumstances easily demonstrate the variableness of the position of the colon and what little reliance can be placed upon its location and shape as it may appear in a roentgenogram at any given time. This generalized remark applies with particular emphasis to the consideration of those portions of the colon which possess a long mesocolon, viz. the transverse and the pelvic colon.

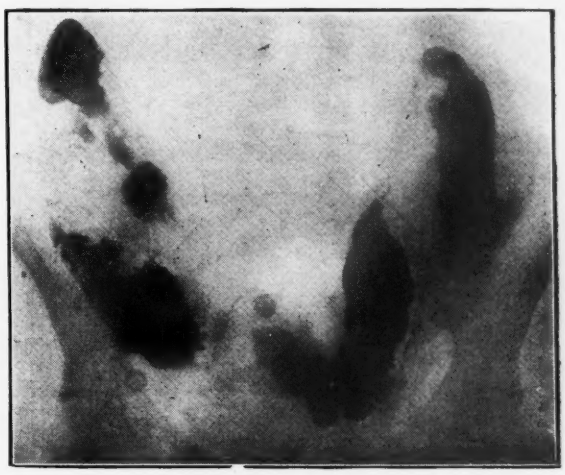

Fig. 2. Roentgenogram illustrating "mass" peristaltic movements such as are figured in preceding diagram.

I believe that in the great majority of cases the cause of constipation is to be found in the pelvic colon or rectum, although the subjective symptoms may seem to be more pronounced in the proximal colon. Doubtless, the constipating lesion is often a complex one and frequently associated with adhesions. Such adhesions are not only a cause of constipation, but often also a result of it, the situation thus assuming more or less the nature of a vicious circle.

The observations upon which this paper is

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based have been made on a large series of patients at the Battle Creek Sanitarium, the roentgen observations being made in the Roentgen Department by my colleague, Dr. L. L. Jones, and myself, and the surgical operations being performed at the Sanitarium Hospital in the surgical services of Drs. Kellogg, Harris and myself.

In introducing this discussion, it may be well to review certain anatomical facts. According to the newer terminology, the colon is divided into the following parts:

(1) The *cecum,* being the portion below the ileocolic valve;

(2) The *ascending colon* as far as the hepatic flexure;

Fig. 3. Roentgenogram made fifty hours after ingestion of the barium meal in a case of carcinoma of the descending colon. It will be noted that the barium is backed up in the proximal colon in a manner demonstrating the characteristic effect of exaggerated antiperistalsis. The densest mass is in the cecum and ascending colon rather than in the distal colon, just proximal to the tumor.

(3) The *transverse colon,* being the portion between the hepatic and splenic flexures;

(4) the *descending colon,* from the splenic flexure to the crest of the left ilium;

(5) The *iliac colon,* from the crest of the ilium to the inner border of the left psoas muscle;

(6) The *pelvic colon,* from the termination of the iliac colon at the inner margin of the left psoas muscle to the front of the body of the third sacral vertebra, forming when empty an acute angle with the rectal ampulla. The length of the pelvic colon is variable, the aver-

Fig. 4. Roentgenogram made twenty-six hours after ingestion of the barium meal. A certain portion of the barium has passed into the pelvic colon and rectal ampulla. The remainder is banked up in the colon, mostly in the proximal colon, in a manner characteristic of exaggerated antiperistalsis—in this case due to excessive tonicity of the distal colon. There was no pelvic colon obstruction in this case.

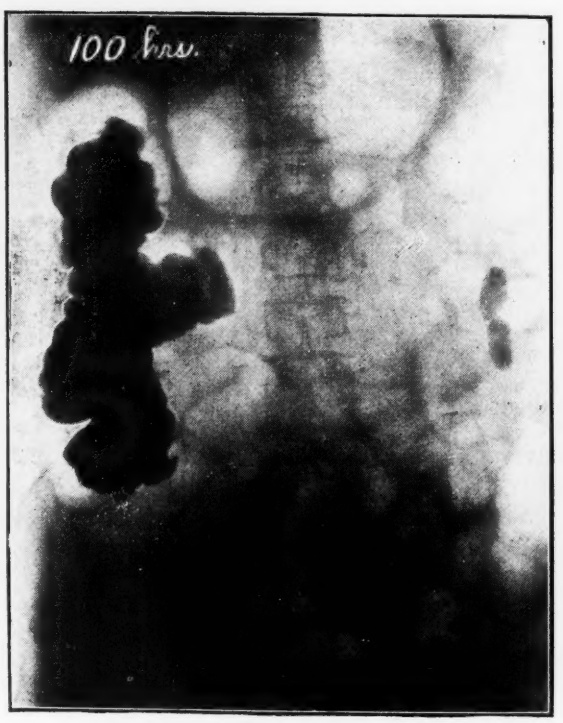

Fig. 5. Roentgenogram showing barium banked up in the proximal colon (cecum, ascending colon and first portion of tranverse colon) one hundred hours after its ingestion. The obstruction occurred in the pelvic colon, being due to adhesions associated with carcinoma of the uterus.

age being 17 inches. It may be as long as 33 inches or as short as 5 inches.

The position of the pelvic colon is very variable. The following is modified from Cunningham's description as its most common arrangement:

Fig. 6. A normal colon, enema-filled. The pelvic loop has risen up out of the true pelvis, demonstrating its mobility.

Fig. 7. Same colon shown in Fig. 6 a few minutes later after patient has expelled the enema. It will be observed that the success of the expulsive effort was ideal, the entire colon being emptied.

Beginning at the inner margin of the left psoas, it first plunges over the brim into the pelvis, crossing this cavity from left to right. It next bends backward and then returns along the posterior wall of the pelvis toward the middle line, where it turns down and passes into the rectum.

The normal pelvic colon, when empty, lies in the posterior part of the pelvis immediately in front of the rectum, but as it becomes filled it rises into the abdominal cavity so that the angle it forms with the rectum becomes less acute.

It is very important to note that the pelvic colon normally forms a freely movable loop, its mesentery being longest in the middle of the loop and shortest at the extremities. We therefore expect to find the large bowel relatively fixed at the junction of the iliac with the pelvic colon (the iliopelvic junction) and at the junction of the pelvic colon with the rectum (the pelvirectal junction).

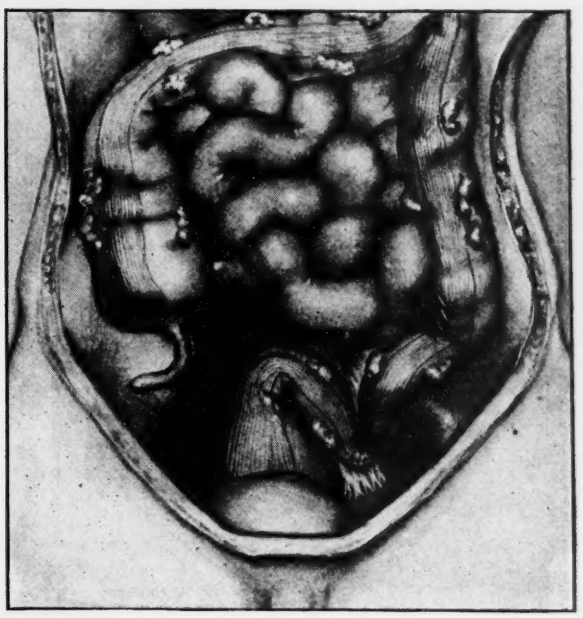

Fig. 8. A drawing (Tuttle) showing an acute flexure of the duodenum with adhesions involving the left tube and ovary. This is a graphic illustration of the usual manner in which pelvic colon adhesions interfere with the normal, free mobility of the pelvic loop.

The large intestine is normally emptied below the splenic flexure in the act of defecation, the proximal colon and right half of the transverse colon being the seat of antiperistalsis, as has been shown by Cannon, Jacobi and others in animals, and by the experiments of myself (1) and others in man. As the result of these antiperistaltic influences, there occurs in the proximal colon a certain delay which permits further digestive and absorptive processes to take place.

The transportation of food from this zone of antiperistalsis into the distal colon is prin-

cipally brought about by the so-called "mass movements," first described by Holznecht. By these mass movements, which are said to occur about six times daily, large boluses or masses of fecal matter are rapidly carried across the transverse colon into the distal portion of the bowel.

Other movements by which the transportation of food occurs are the large pendulum movements, first described by Rieder, and the small pendulum movements which are also called haustral contractions. The latter have been particularly well described by Schwartz. These lesser anastaltic movements do not, however, succeed in bringing about any very satisfactory propulsion of bowel content, this being largely

Fig. 9. Roentgenogram of an enema-filled colon in a case of adhesions of the pelvic loop with marked constipation. See Fig. 10.

brought about by the "mass" movements above referred to.

Normally, the descending and the iliac colon are found either empty or containing only a small quantity of fecal matter in transit. The fecal material gradually accumulates in the pelvic colon above the pelvirectal flexure which, as above stated, is formed by the junction of the pelvic colon with the rectal ampulla. Here there occurs a normal obstruction to the onward passage of the feces, as O'Beirne was the first to show.

Until just before the act of evacuation, the rectum is normally empty, except occasionally for a few traces of fecal matter: remainders of the previous defecatory act. As more and more fecal matter descends from above, the pelvic colon gradually fills from below upward. As it fills it rises, so that the acute angle it forms

Fig. 10. Roentgenogram of same colon as shown in Fig. 9 after operation for release of adhesions of the pelvic loop with omental suspension of the loop thus mobilized. Almost complete relief of constipation.

Fig. 11. Another case of pelvic colon adhesions where the adhesions, by their nature, seriously interfere with the evacuation of the contents of the colon. This case was completely relieved by operation.

with the rectum, when empty, is obliterated and the way is made easy for the propulsion of fecal matter into the rectum. As fecal matter thus

begins to pass from the pelvic colon into the rectum, the resulting sensation of fulness leads

Fig. 12. An enema-filled colon in a case of very serious constipation, a post-operative development, after hysterectomy. Ordinarily the patient should be able to expel practically the entire content of the enema-filled colon at one effort (Figs. 6 and 7). As it was the patient could only empty the contents of the lower portion of the rectal ampulla. (See Fig. 13).

Fig. 13. Enema-filled colon shown in Fig. 12 after the patient's most earnest effort to expel the enema. The hindrance evidently lies in the adherent rectal ampulla and lower pelvic colon.

to a desire to evacuate the bowels. Hertz draws attention to the fact that in the absence of any desire to evacuate at the proper time, this may be voluntarily produced by contraction of the abdominal muscles and diaphragm, forcing fecal matter into the rectum and thereby setting up certain impulses which pass to the defecatory center in the lumbar spinal cord, where they set in action the reflex acts necessary to complete the evacuation. Among these activities are strong peristaltic contractions of the colon, resulting in mass movements.

It was formerly believed that the strong peristaltic contractions of the large bowel, completing the act of defecation, were limited to that portion of the colon below the splenic flexure, but numerous observations on a large

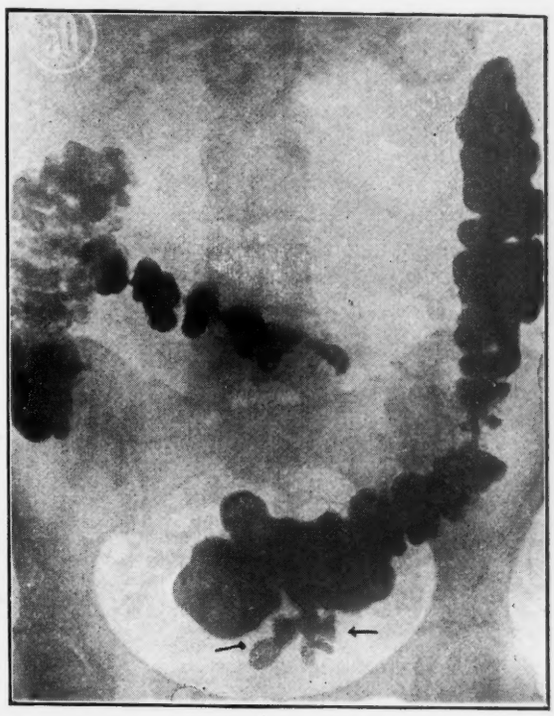

Fig. 14. Another illustration of obstruction low in the distal colon. Roentgenogram shows colon fifty hours after the meal and immediately after the patient's persevering effort to evacuate the bowel. It will be observed that only the lower half of the rectal ampulla was emptied. This patient had been operated upon for the removal of the appendix without relieving the right lower quadrant symptoms which led to the operation.

number of subjects after an opaque meal assure me that these powerful contraction movements frequently begin in the ascending colon and may even commence in the cecum. These powerful peristaltic movements are, I believe, identical with the peristaltic mass movements above referred to, by which food is propelled from the proximal colon into the distal colon. The most favorable time for observing mass movements is during or immediately after defecation. It is also noticeable that many of

the patients in whom we have observed these mass movements have exclaimed at the time of the movement that they felt as though they could move the bowels.

The normal defecatory act should clear the colon below the splenic flexure. When the colon is tested by the injection of the opaque enema,

Fig. 15. Case of multiple diverticula of the colon with perisigmoiditis and tumor just below the brim of the true pelvis on the left side. The arrows point to a few of the diverticula, which show a barium residue from the meal given seventy-four hours previously. The present roentgenogram was made after an attempt to fill the colon by enema. Note the distension of the rectal ampulla due to the force required to send the liquid enema through the stenosed iliac colon.

the patient should be able to expel the entire enema content of the colon at one effort. When the pelvic colon is bound down by adhesions or fixed by the pressure of large pelvic tumors, the defecatory act fails to empty the pelvic loop.

In some cases there is absolute inability to expel fecal matter owing to anal fissures, hemorrhoids, rectal ulcers or atony of the rectal misculature. Such cases should be classified under rectal constipation. In another class of cases the patient can empty only the rectum below the pelvirectal junction, owing to a kind of invagination of the too redundant pelvic colon.

In a large percentage of cases we observe that the patient can empty the rectal ampulla and more or less of the pelvic loop, but no more. On re-examination, it is characteristic that the point of apparent hindrance is always the same, and may be described as occurring at the pelvirectal junction, the middle of the pelvic loop or just below the iliopelvic junction, as the case may be. Such hindrance is in my opinion definitely associated with fixation of the colon, usually by adhesions, and by careful fluoroscopic observation of the colon before and after normal defecation and in connection with the barium enema test, both during its injection and after its expulsion, we may definitely determine the presence of such binding adhesions. It may be wiser to speak of the condition as abnormal fixation, admitting that a certain degree of fixation may be normal.

When tested by the opaque enema, the ampulla suffers marked dilatation in cases of adherent pelvic colon, the amount of distention depending upon the degree of obstruction, the length of time it has existed, and whether or not the patient has made an earnest effort to keep the bowel cleansed by enemas. Some of the most pronounced cases of rectal distention have been observed in patients who have practiced the injection of large enemas.

Enterospasm very often attends adhesions of the pelvic colon, but it may also, of course, be present as an expression of irritation of any other kind. Possibly the nodal bundle presiding over this segment of the colon is the seat of disease or irritation; or there may be a chronic colitis or a diverticulosis, or any one of a number of conditions simulating colitis or attended by this condition as a symptom.

The work of Keith is bringing forward a very attractive theory concerning the cause of enterospasm (2).

A persisting spastic contraction of the pelvic colon offers an obstruction which may be as serious in its resulting alimentary toxemia as an organic lesion. It is often noted that, associated with spasticity in the pelvic colon, there is a dilatation of the proximal colon leading ultimately to an atonic condition of the bowel musculature in the cecum and ascending colon, the patient's complaints being chiefly in reference to the cecum and ascending colon.

Many of these patients complain of pain in the cecal region, even after removal of the appendix. In fact, I believe the appendix is often unwisely operated on because of a chronic pain in the right lower quadrant. (I do not, of course, refer to operations for acute or recurring appendicitis). Some patients describe a chronic tenderness in both iliac regions. I am convinced that the distress and pain so fre-

quently described on the right side is more often due to chronic cecal stasis, whereby the appendix may become involved if the patient still possesses it, the cecal stasis being the result of obstruction in the distal (or pelvic) colon and the exaggerated antiperistalsis attending it.

Some cases of pelvic colon spasticity are seen to be associated with multiple diverticula, the detection of which I have fully considered elsewhere (3). Carcinoma of the pelvic colon or rectum is occasionally the associated lesion (4). Both carcinoma and diverticulosis are important causes of pelvic colon obstruction, aside from the enterospasm they may set up. No more space will here be devoted to these subjects, as my principal object in appearing before you is to urge the importance of adhesions of the pelvic colon, the importance of dealing with them surgically in properly selected cases, the great need of adopting an operative technic which will minimize the likelihood of such adhesions forming, and the inadvisability of operating for these adhesions, when carefully conducted roentgen studies fail to provide proof of obstruction. Most adhesions do not obstruct. It is well to take account of the fact that the pelvic colon is more or less fixed at its two ends, being freely movable in the middle of the loop. Hence, the adhesions will be most significant when they can be shown to involve the middle of the pelvic loop.

Fig. 16. Roentgenogram showing colon tube coiled up in the rectum. This is the usual result when one attempt to pass a colon tube more than three or four inches into the bowel. It is impossible by manipulation to insert any colon tube higher than the junction of the iliac and pelvic colon, and this degree of success is unusual. The roentgenogram also shows some barium residue from a previous meal.

The method of dealing with these adhesions surgically is a vexing one and a problem to which we feel the last answer has not yet been given. In our work we have occasionally done an operation suggested by Dr. Kellogg by which the pelvic loop, when fixed, is supported in its lifted position by attachment to the omentum, the latter being sutured to the anterior abdominal wall. This secures for the pelvic colon a swinging attachment which, though not fixing it, holds it out of the bottom of the pelvis. The results of this type of operation, though not done on a large series of patients, have usually been very satisfactory in the cases selected for surgical relief.

Emphasis should again be placed upon the fact that the mere determination of the presence of adhesions is not sufficient indication for operation: there should also be proof of the functional disturbance due to, or associated with, these adhesions, this disturbance resisting the various non-surgical measures indicated.

It also seems proper to raise a question as to the advisability of the practice of using the pelvic operations, such as hysterectomy. No objection is raised to covering raw surfaces by the pelvic colon, providing this organ is allowed to fall into its natural position in so doing; but one often sees the pelvic colon crowded down in this procedure in a manner that invites the very kind of disturbing adhesions to the discussion of which this paper is devoted.

I would also call to your attention once more the needlessness of using the colon tube for administration of enemata. Yates, of Detroit, read a paper before this section of this Society some ten years ago on this subject. In over seven thousand cases I have injected the entire colon by means of the enema, employing only the ordinary rectal point inserted just within the anal sphincter, the patient lying supine. Only in those cases of organic obstruction, for instance, malignancies or tumors, did the enema fail to reach the cecum within a few minutes, under no more pressure than that afforded by having the enema container held about two feet above the patient. In the majority of cases two pints of enema sufficed to fill the colon, in rare instances three pints were required, but never more.

I will show you a number of slides demon-

strating the impossibility of introducing the colon tube higher than the junction of the pelvic with the iliac colon. It is perfectly possible to introduce the entire colon tube into the bowel, but the tube curls around upon itself in the pelvic colon, distending it sometimes to a very distressing degree.

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THE EVOLUTION OF ANESTHESIA.*

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Probably no achievements in the history of the Anglo-Saxon race have been greater, or more beneficent to humanity, than the discovery of ether by an American, and chloroform and the antiseptic methods, by Britons. The latter was thoroughly reviewed in the excellent paper recently presented to this Society. The object of my effort, this evening, is to give to you as fully, yet briefly as possible, the salient features of anesthesia in its development from its ancient, and crude use, to its modern scientific application.

The artificial production of deep sleep, and the abolition of pain, have been commonplace incidents from pre-historic, or at least very ancient, times, and have been alluded to with poetic license by writers of myth and fable in all eras. Homer makes his Ulysses succumb to the influence of Nepenthe. The suffering in the Divine Tragedy on Mount Calvary, nineteen centuries ago, was attemptedly assuaged by the draught of vinegar, gall and myrrh.

The anesthetics in use today did not usher in an unknown psychic state. Their importance lies in the fact that the coma they induce is more nearly under the control of the operator, and is followed by fewer subsequent evils, than the other agents preceding their advent.

In order that we, as modern practitioners, may understand fully the development of anesthetics in our work, it is interesting to review briefly the history of this induced condition. As the archaeologists decipher the hieroglyphics of the ancient races, whether those of Egypt, India, Peru or Yucatan, they reveal the fact that no nation has yet been discovered that did not have some means of producing artificial sleep and insensibility to pain. In many instances the drugs, and methods of application, are clearly set forth.

The Egyptian priests fed the Initiates little cakes made from lotus seeds mixed with the juice of poppies, myrrh, etc., which produced a state of dreaminess, developing into stupor or ecstatic bliss, according as the proportions of the various ingredients were altered. Indian hemp, or cannabis indica, was another useful accessory, and Herodotus records that the priests of Isis had worked out to a most exact science, the varying amounts of Indian hemp to be administered in order to obtain all the stages of narcosis, from simple docility and absence of will, to complete obliviousness to pain. He likewise describes various lotions made from native herbs, used for bathing people about to be operated upon. This same fascinating historian also records an interesting phenomenon of which constant use was made in various parts of the Roman Empire. When the boiling waters from certain volcanic springs were mingled with fermented grape juice, most pleasing odors were developed, and from these vapors came "Prophetic dreams, and unconsciousness, blessed gift of the gods." This "vapor," which he praises so highly, was probably a crude form of ether.

When the Scythian physicians contemplated a surgical operation, preparations were made with ceremonial exactness. A tent was prepared by driving three long poles into the ground, and covering them with skins until the enclosure was practically air-tight. Within this tent a hugh fire was built, and covered with stones. When this formed a red-hot bed of coals, the patient was carried in. Hemp seeds were thrown on the heated stones, and the sufferer was then left alone until the fumes had rendered him perfectly insensible. After this stage was reached, he was conveyed from this tent into the presence of the operating physicians, who immediately set to work. It is recorded that every variety of amputation, and very original attempts at plastic surgery, were performed with great ease under this anesthetic. Many did not regain consciousness for several hours after the completion of the operation, but there was little mortality from the anesthetic itself.

Dioscorides, a Greek army surgeon in the

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service of Nero, 54-68 A. D., describes an effusion of the mandragora, which was used by the Arabians to produce insensibility. The Arabians were very loath to make any use of this drug, as they were opposed to cutting or mutilating the human body. They preferred the healing power of herbs, and where these were inadequate, the patient usually looked on death as a necessary evil that it were better not to avoid.

Notwithstanding the slight use made of the mandrake by the Arabians themselves, they were very proficient in the theory of its administration, and from them Dioscorides learned its preparation and practical application. He used it extensively in his own work, and advised his pupils to follow his example. This enterprising physician left minute directions for the gathering, and preserving of the plants, and the preparation of the lethal dose itself. Translating his prescription literally, we read: "Boil down the roots in wine to a third part, and give one cyathus to those that are about to be cut, sawed, or burnt, in any part of their body, so that they may not perceive pain." Pliny, a few years later, testifies to the stupifying powers of this potion, saying: "It is drunk against serpents, and before cutting, puncturing or burning, lest they should be felt." The famous English surgeon, Sir Benjamin Ward Richardson, as an experiment, used the identical prescription of Dioscorides in the hospitals of London, in 1900, with the greatest success.

Chinese physicians for centuries have given preparations of cannabis indica by which their patients became totally insensible to pain, and could be operated upon every conceivable way. A Chinese "Herbal," of the Fifth century, B. C., mentions three ways in which hemp might be administered. It could be smoked; eaten in sweet-meats prepared with honey, sugar, and aromatic spices; or, the leaves and fruit could be boiled with water and butter. The butter absorbs the resinous matter which contains the active principle, and this butter when eaten will produce a delirium followed by deep narcosis. There is a loss, first of the sense of touch, then of all the other senses, followed by complete insensibility to pain, due, probably, to the non-concerted action on the part of the two halves of the cerebrum.

The Druids of Britain, and the wild races of ancient Gaul, when conquered by Rome, were using potions of various herbs to produce a lethal stupor. A lengthy catalogue of these herbs, and descriptions of their uses, has descended to us from these Roman invaders, and from the Church chronicles of the time; but it is very doubtful if any of the European preparations could compare at all favorably with those in use in the Orient. Nevertheless, this evidence of Eastern pharmaceutical skill was not thrown open to the world until the return of the Crusaders.

Hugo di Lucca, and his son Theodoric, returning from the Crusades, brought complete formulae for the preparation and administration of hemp, opium, and several other famous narcotics, and urged the physicians of Paris to adopt them.

Strangely enough, the means of obtaining insensibility to pain became widespread amongst the executioners and malefactors, who, in turn, spread their knowledge throughout the ignorant classes. It is recorded that several of the public executioners were able to retire with immense fortunes, derived from the sale of these secret remedies to the poor unfortunates condemned to the Torture Chamber. The indifference of the Universities of Europe to these drugs is almost beyond our comprehension, but the fact remains, that the Orient alone favored their extensive use in surgery.

Guy de Chauliac (1300-1370) offered to administer a narcotic to a reigning king of Europe, for the removal of a cancerous growth. His bishop, with the characteristic attitude of the Church towards science in mediaeval times, dissuaded him with a specious argument that, since this relief came from the Orient, it must of necessity be diabolical, and the Devil, therefore, in all probability, would seize his soul while it was absent from his body in this pernicious "dream sleep"! The ecclesiastic maintained that faith, prayers, and fasting were more efficacious than a pagan drug, and urged him to emulate the saints and martyrs in their capacity for the endurance of suffering. The king chose to undergo the ordeal without the anesthetic, much to the chagrin of de Chauliac.

Meisner mentions a secret remedy which Weiss used in the Seventeenth century on August second, King of Poland, producing such perfect insensibility to pain that a leg was amputated without his knowledge. Weiss attempted to keep his remedy secret, since he dreaded ecclesiastical interference, but it is quite apparent, from contemporaneous writings, that he used both Indian hemp and opium.

The archives of the Borgias are replete with suggestions of many subtle potions that could

be used to produce surgical anesthesia, but which, unfortunately, were all too frequently employed as secret poisons against political enemies, as we have all learned in history.

Arnott, of London, was accustomed to place his patients in an alcoholic stupor, and some of his pupils produced insensibility by excessive bleeding to the point of exhaustion. In cases of amputation, he applied a freezing mixture of ice and salt directly on the part to be cut, according to the practice of Larrey, Napoleon's private physician, who discovered the benumbing effect of the intense cold upon wounded soldiers, in the Russian campaign.

Mesmer, reviving the traditions of Pagan days, entered Paris in 1776, and began initiating Europeans into the mysteries of what he designated as "Animal Magnetism," but which his ardent partisans soon termed "Mesmerism."

Whether mesmerism is really the introduction into the patient of a vital fluid, or "current," flowing through the operator as a medium, or whether it is merely a phase of self-induced hypnosis on the part of the patient, are, perhaps, questions of great technical import to the psychologist. The general practitioner is interested more in the results themselves.

Mesmer was not entirely a fraud. Primarily he produced the deepest states of insensibility by very simple means, but, as a wandering physician, he had learned the nature of the ignorant rabble thoroughly. He realized, instinctively, that his methods were too simple to hold the admiration of any crowd more than temporarily. He decided that his ultimate results could not be affected by preparing a more impressive environment for his operations. Hence we soon witness all the ludicrous paraphernalia which he assembled at his headquarters in Paris. At first, he worked in a small quiet room furnished with nothing but two chairs and a table, but, within a year, these same rooms were hung with black velvet embroidered in cabalistic designs, and he himself donned the garb of an Oriental mystic. Running water will hynotize some people, so he utilized his knowledge of this fact by having a fountain erected in the middle of this room. He placed a simple magnet in the bottom of this fountain, and directed his patients to gaze at this object through the flowing waters. The people sought him in such vast numbers that the streets were blocked, and traffic suspended, in the vicinity of his residence. He, thereupon, stretched wires from his fountain out through the doors and windows. Those who were unable to gain an entrance to his office, were magnetized by holding these wires.

His enemies, at this juncture, induced the authorities of Paris to condemn Mesmer as a public nuisance. In response to their indictment, he showed the results of his "Magnetism," and pointed to the long list of operations that had been successfully performed while patients were insensible under his mysterious influence.

Maria Theresa had condemned him as a quack in 1760, and, without even the formality of an impartial investigation, had driven him from the city of Vienna with less than the usual "twenty-four hour notice." The French government, being disposed to act with greater justice, chose a committee of investigators, amongst whom were the great Lavoisier, our own Benjamin Franklin, acting as Chairman, and others equally prominent.

Had Mesmer not surrounded himself with so many superfluous incidentals, this committee would, doubtless, have done him greater honor. As matters stood, however, his "cures" were so mingled with jugglery, superstition, and vulgar stage-trappings, that these men of science concluded that Mesmer, and his methods, were a stupendous fraud.

Franklin, alone, seemed to realize that there was really an element of great psychic import buried beneath a mass of rubbish, and, whilst he deplored the charlatanic methods, into which Mesmer had sunk, he alone refused to condemn the underlying reality of the phenomenon itself. He concluded that the morbid desire of Mesmer's adherents for the mysterious sensations of magnetism, might, possibly, do permanent mental injury, but suggested that honest physicians ought to investigate the matter thoroughly, and make practical use of its anesthetic stage for surgical operations.

The Hindu devotees, for countless ages, have been accustomed to place themselves in a trance by many methods that we now classify under the generic term "Auto-hypnosis." Some of the favorite devices were: gazing unwinkingly at stars, or at some point selected in the landscape; repeating the sacred syllable "Aum" a countless number of times, until the brain was benumbed into insensibility. It is not at all improbable, in lieu of our present knowledge of hypnotic influence, that the famous Oracle of Apollo, with its mysterious and inarticulate utterance, may have produced insensibility in those who approached it.

The monotonous repetition of two or three musical intervals will, in some individuals, pro-

duce hypnosis. The Hungarian Gypsies use a musical phrase for this purpose which, curiously enough, is identical with the one recorded in the temples of Egypt and India for centuries.

These wandering Gypsies were often very skilled physicians, and, throughout Hungary and Bohemia, were very popular because they could perform the most serious operations with wonderful success, and, what is more—as is recorded in the chronicles of the famous Esterhazy family—"they could do it painlessly, having placed their patients in the deep sleep of insensibility."

Athanasius Kircher (1602-1680), the versatile Jesuit priest, famous as a mathematician, physicist, optician, Orientalist and musician, in addition to having achieved distinction by being the first to employ a crude microscope in investigating the causes of diseases, published a volume containing the results of his own experiments in magnetism. This work, "Magnes sive de Arte Magnetica," appeared in 1643. Just before his death, in 1680, he published his last contribution to the annals of medical literature: "Physiologia Kircheriana," wherein he described still further results with hypnotism.

Mesmer spent several months in the Abbey of Fulda, where he had uninterrupted access to Kircher's manuscripts. He may have acquired his mysterious art from this source. Another plausible theory is that the wandering Gypsies of Bohemia, already mentioned, brought their knowledge from the Orient, and that Mesmer received it from them.

Benjamin Franklin had urged a more scientific study and application of Mesmerism, but, with the remarkable exceptions of Elliotson and Esdaile, few physicians made serious attempts to employ hypnotism in surgery.

John Elliotson lost his position as a professor in the University of London, in 1843, for steadfastly advocating, and using, hypnotism as an anesthetic, and for publishing a pamphlet entitled: "Numerous Cases of Surgical Operation without Pain, in the Mesmeric State." He continued the use of Mesmerism in his private practice; held séances in his own home; edited a magazine, *"The Zoist,"* devoted exclusively to this subject; and in 1849 founded a Mesmeric Hospital, in which he successfully operated, occasionally under hypnotic anesthesia, until his death in 1868.

James Esdaile of Scotland, had an even more impressive record. Sent to India in 1846, as a physician in the Indian service, he used Mesmerism in the performance of over two hundred and sixty painless operations, which he has described in his book 'Mesmerism in India in 1846."

These operations range in importance from hydrocele and elephantiasis, which are of unusual frequency throughout India, and the extraction of teeth, to the removal of cancers from the breast, rectum and cheek, cataracts and amputations of every variety. One of the last of his cases was that of a native shopkeeper afflicted with such a monstrous scrotal tumor that he had been able to do little more than sit on a chair, for many years. Esdaile relates that this Hindu had become accustomed to use his protuberance as a writing desk and table, but its increasing size finally prevented even this convenient practice! It required four days to place him in the mesmeric coma, but he finally succumbed, and, in the presence of many interested witnesses, Esdaile removed the tumor, which weighed over eighty pounds. The rush of venous blood was unusually severe, but was finally arrested, and all vessels tied. The exhaustion from this loss of blood was the only untoward symptom, but he made an uneventful recovery.

Esdaile, upon returning to Scotland, was determined to continue his surgical activities under the conditions he had found so favorable in Bengal. He finally concluded, as the result of innumerable experiments, that, with rare exceptions, the European differs markedly from the introspective Hindus, in being less readily susceptible to hypnotic influence.

Charcot taught that hypnosis was essentially a morbid manifestation of hysteria, and hystero-epilepsy, a theory which limited his own progress, and the extensive use of this agent in disorders other than those of a neuropathic character. Many surgeons were mentally prepared to accept hypnotism, but were prevented by the fact that they seemed personally unable to produce any of its stages of coma on their own patients. Bernheim was struggling with this aspect of the problem, when an incident occurred which practically relegated hypnotism to the store-house of defunct therapeutic agents forever.

The greatest geniuses in the medical profession were fast becoming confirmed skeptics concerning the possibility of "absolute anesthesia;" the faculty of the Sorbonne declared it a wild fantasy, to be classed only with "perpetual motion," and the "elixir of youth"! Velpeau, the greatest French physician of his day, as late as 1839, says: "To escape pain in surgical

operations, is a chimera which we are not permitted to look for in our day."

At this juncture occurred an event, so momentous in importance, so far-reaching in its possibilities, that it should stand forth in history as a distinct achievement in human advancement: the discovery of ether by Morton, seventy years ago last October, for Morton had the temerity, in his investigations, to develop ether to the point of its real usefulness. There is no doubt that ignorance and fear, as well as popular prejudice, had restrained Wells, Jackson, and Long from projecting their experiments further than the so-called "ether frolics," which had been in vogue at Cambridge, and elsewhere, for several years. Morton, however, gave ether its scientific application, and forced mankind to listen to him.

It is of interest to note the eagerness with which the various aspirants vie with each other for the honor of obtaining practical success in the use of ether. Wells, of nitrous oxide fame, following the teachings of Sir Humphrey Davey in 1799, and Jackson of Harvard, a geologist and mineralogist well known abroad, having experimented extensively in general science, magnetism and electricity, as well as having discovered and opened copper and iron mines of our own Upper Peninsula, were much agitated by Morton's experiments, and both claimed priority of discovery. Jackson even visited Europe, presenting his claims to various scientific organizations, and the French Institute actually recognized him as the "discoverer of modern anesthesia."

A select committee of our House of Representatives, to whom Congress referred the matter in 1854, announced a series of conclusions denouncing all claims but those of Morton. Here again Fate sports, for, whether or not as a result of this controversy, Wells suicided in a prison cell in the city of New York in 1843, and Jackson died in an insane asylum in 1880.

It is unfortunate that Morton allowed cupidity to surpass ethical considerations. He obtained an English patent on his discovery, under the name of "Letheon," and sold office rights to dentists; but the medical profession, then, as today, antagonistic to patents, as subversive of best results, opposed him. Morton's attempt to introduce it in the Mexican war was frustrated by the United States Surgeon General, on the pretext that its highly volatile character could not withstand the rough usage on the field of battle.

Morton's subsequent history was a series of disappointments. He besought the government, not only personally, but through the influence of congressional friends, to render him deserving honors and financial reward, but, after the exhaustion of his energies, his means, and his time, in the effort to acquire pecuniary recognition of his discovery, he died in a condition of temporary aberration, in 1876.

Today the world universally recognizes that he first demonstrated the safety of ether as the reliable and efficient anesthetic, and on his monument in Mount Auburn cemetery, Boston, is inscribed this terse but inspiring sentiment:

> "Inventor and revealer of anesthetic inhalation; before whom, in all time, surgery was agony; by whom, pain in surgery was averted and annulled; since whom, science has had control of pain."

In considering this great American contribution to science, it is opportune to recall the fact that the noun "anesthesia," and the adjective "anesthetic," were both evolved from the brain of another American, Dr. Oliver Wendell Holmes. He proposed the use of both these terms to Morton in a letter which is still preserved. He advocates their use with his characteristic modesty; advises Dr. Morton to consult others before adopting them; but adds that he believes them very apt for their purpose.

One year later, the synthetic preparation known as "chloroform" was introduced to the profession by Sir James Y. Simpson, of Edinburgh. Several individual observations were favorable to the compound in preceding years, but were never given public notice until Simpson, her Majesty's physician in Scotland, and particularly famous in midwifery and gynecology, recognizing the great value of ether in child-birth, sought a substitute of less odor and unpleasant after-effects. He isolated the active principle "chloric ether," or chloroform, with which he experimented, and, on November 4, 1847, proved its anesthetic properties.

A few days later a public test was to have been made at the Royal Infirmary, but Simpson being unavoidably absent, the patient was operated upon without it, and died during the operation. Had this death occurred under the administration of chloroform, it is certain that another great advance in science would have received its death blow. Fortunately, the public test did not occur until two days later, and with most successful issue. The new anesthetic became immediately popular in obstetric practice, but here again we meet that fanatic spirit, relic of the dark ages, and still characteristic

of the Scotch clergy, the pulpit attacking Simpson most vehemently as a violator of the moral law. For, is it not ordained in Scripture, "in sorrow shalt thou bring forth children"? Simpson, however, rose to the occasion, and using their own Biblical weapons, called their attention to Eve's creation, reminding them that when Eve was formed from the rib of Adam, the Lord "caused a deep sleep to fall upon Adam." This was the knock-out blow to the superstitious clergy, and it was permanently silenced.

That Simpson received due recognition for his services to humanity, not only from his own government, but the public at large, is attested by the fact that at his death, in 1870, his body was deposited in Westminster Abbey. There, on his bust are inscribed these words:

> "To whose genius and beneficence the world owes the blessings derived from the use of chloroform for the relief of suffering."

Aside from nitrous-oxide gas, belonging now, principally, to the offices of dentists, the bichloride of methylene, and the bromide of ethyl, comparatively unimportant, cocaine, so universally used, and its discoverer Koller, should be mentioned here.

For many centuries, the leaves of the coca tree have been chewed, or rubbed on the gums, by the natives of Peru, to postpone the sensation of fatigue. Peruvian laborers carry, today, a supply of these leaves in a leather pouch, and work is abandoned four times a day to "chew the coca." A species of snuff is prepared from the same source by drying the leaves, and grinding them to a fine powder. This snuff is in universal use by the whole population, and Koller by modern chemical analysis, revealed the interesting fact that the active principle in these leaves is cocaine.

Mozans, the author of a most interesting volume, "Along the Andes and Down the Amazon," cites the case of an habitual chewer of coca leaves, who was run over by a train. He experienced no pain, although his foot was cut off by the accident.

Cortez found that the inhabitants of ancient Mexico submitted to the most severe surgical operations, in a state of total unconsciousness, after imbibing potions prepared in the native temples for that purpose. Cortez, being a warrior rather than a scholar, left no writings except five letters to his sovereign, Charles Fifth of Spain. In one of these he describes two herbs with properties similar to our henbane and stramonium, and, in addition, states that he repeatedly witnessed trephining by the native doctors, after the patient had been rendered insensible with a preparation from the cocoa leaves.

Koller reported to a Congress of German oculists at Heidelberg in 1884, his experiments upon lower animals with this active constituent of coca leaves, with the result that, within a few weeks, it was international in its use, and has today an assured, and important, place among anesthetic agents. Other related alkaloids, as eucaine and holocaine, products of synthetic origin, deserve but passing mention. Notwithstanding some of the disagreeable possibilities latent in cocaine, a very large percentage of the civilized world has been relieved of much pain by its local use, and to Koller humanity owes a great debt of gratitude.

In conclusion, I beg your indulgence for a moment, to speak of some personal impressions and reflections of a few years ago—which possibly have been shared by some of the profession present—when it was my pleasure to look upon the bust of that great benefactor, Simpson, in Westminster Abbey, occupying, as it does, its modest niche amidst many other memorials to Scientists and Litterateurs, and, a few days later, to visit the tomb of the great Napoleon. There, under the brilliant dome of the Hotel des Invalides, as I gazed down upon the grandeur and magnificence of that monstrous single block of granite, surrounded by the standards and captured battle-flags of his defeated hosts, a regal sarcophagus, containing the dust of the greatest conqueror in history, I could but contrast the deeds of the two.

Whether, or not, the life of that incomparable military genius was an evolutionary factor in human progress, one can but compare the liberation of millions from suffering, and the consequent happiness brought to innumerable families, by the one, with the untold murder, and misery, and anguish of multitudes wrought by the other. The truth unfortunately obtains, however, that the greatest honors and rewards have been paid to the *destroyers* of our race, *never* to its saviors and protectors.

Although the discoveries of Lister, Morton, Simpson, and many others of our profession, have saved immeasurably more lives than have been lost through war's destructive forces, they illuminate history with far less lustre, a sad commentary, indeed, on human intelligence, and our vaunted *Christian* civilization.

THE RADIAL CHOLESTERIN STONE IN GALL BLADDER SURGERY.

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Cholesterinemia has of late developed considerable discussion and many reports. These deal chiefly with infections and metabolic conditions relating to gall-stone formations and their treatment.

According to Naunyn's law two factors must be present for the formation of gall-stones, viz: stagnation and infection. This law has long been accepted.

Aschoff more recently demonstrated that stones of a characteristic type (the radial cholesterin stones) are found in gall bladders in which there has never been infection, either acute or chronic, but simply stagnation.

For a long time it has been recognized clinically that a history of gall-stones may often be traced to pregnancy and typhoid infection. This occurrence in pregnancy has never been satisfactorily explained, in that only mechanical reasons were advanced, such as bile stagnation caused by direct pressure from below. Lately another reason, which may be equally as important as stagnation, has been found in the discovery that the cholesterin content of the blood is increased during pregnancy. It has been shown recently that there is also an increased amount of cholesterin in the blood in typhoid fever.

Much interest has been displayed in the origin of cholesterin, and controversies well worth reading have arisen on this theme, but in this paper we are less interested in the origin than in the resulting gall-stones, especially the so-called pure cholesterin stone, or more correctly termed radial cholesterin stone. They were called pure cholesterin stones before it was discovered that the brownish color in the center consisted of a trace of bile pigment and calcium. They are, therefore, not 100 per cent. pure but nearly so.

The radial cholesterin stones, in the preinfectious period, occur singly, are round or oval, and usually lie in the beginning of the cystic duct. They may vary in size from that of a pea to a nutmeg. When moist they present a crystalline lustre ranging in color from clear white to light yellow. The surface is slightly roughened by projections corresponding to the trabeculae which radiate from the center to the surface, as may be noted in the cross-section of figures in Plate 1. The general structure of the stone indicates that it is the result of simple crystallization, growth having advanced through the apposition of new crystals at the end of the trabeculae. This is substantiated by leading mineralogists.

These stones, therefore, are quite different both in composition and structure from the stones commonly found in infected gall bladders which, it will be remembered, are either arranged in layers or merged into an amorphous

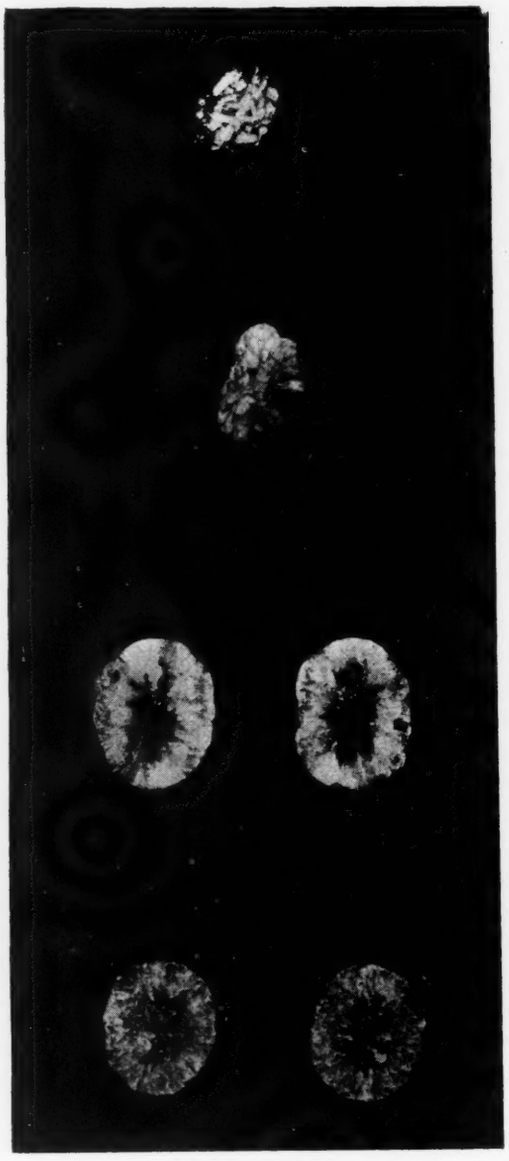

Plate I.

mass. Since stones of this type occur in noninfected gall bladders they rarely produce symptoms, and for this reason are found more frequently by the prosector than by the surgeon. Aschoff goes so far as to say that they never produce symptoms. I cannot disprove his claim but I am inclined to doubt it. A case recently came under our observation with a history of gall-stone attacks. At operation a single radial

cholesterin stone was found in a gall bladder which macroscopically appeared normal. The bile also appeared normal. A cholecystostomy was done, therefore a microscopic examination was not made, so I cannot be sure that there was no infection present; however, it would seem reasonable to suppose that the presence of a stone (foreign body) might produce sufficient irritation to excite the gall badder to attempt to expel it, with resulting attacks of gall-stone colic. I would like to see this point settled more definitely.

The probability is that in themselves they rarely produce symptoms, yet they predispose

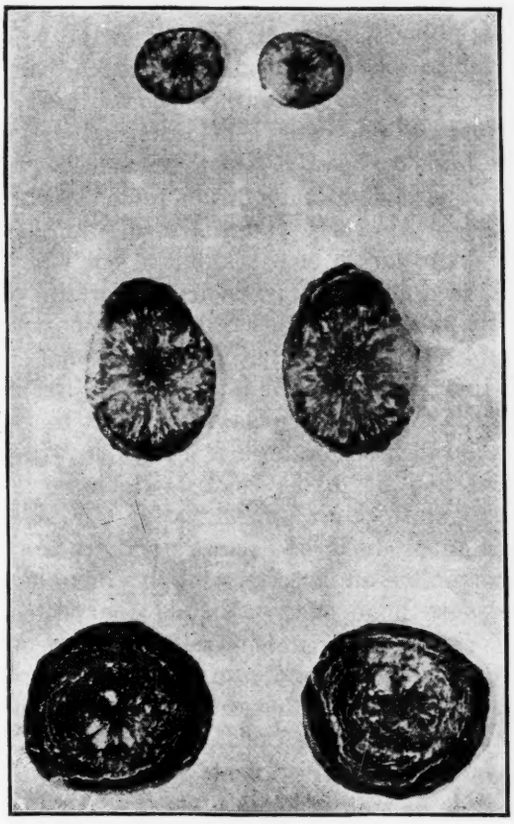

Plate II.

to infection by virtue of interfering with the drainage of the gall bladder. In the event of infection, calcium is formed in varying quantities, and may either be deposited on the radial cholesterin stone, soon concealing its identity, or new mixed stones may be formed; so that, then, there may be one radial cholesterin stone plus one or many mixed stones.

If the patient is operated upon soon after the onset of gall bladder symptoms, say in the first attack, before an excess of calcium has been thrown out by the inflamed mucosa, characteristic radial cholesterin stones may be found, as shown in Figures 1, 2 and 3 (Plate 1). The gall bladders, from which these stones were removed showed recent inflammatory changes. The stone represented in Figure 4 (Plate 1) was found at autopsy several years ago. At that time we were not particularly interested in this subject, therefore, the gall

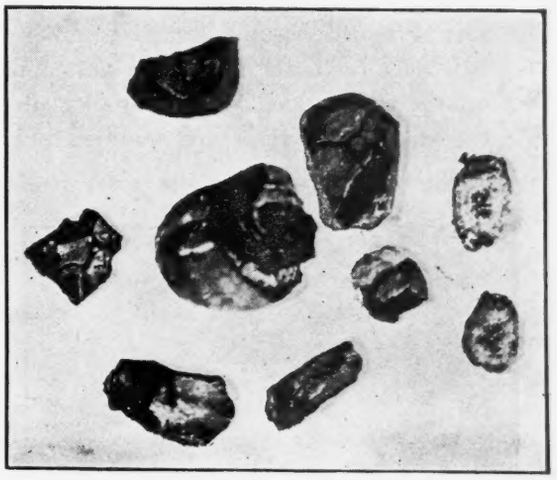

Plate III.

bladder was not examined, however, macroscopically it appeared normal.

The figures shown on Plate II represent radial cholesterin stones, covered with a coat of bile pigment and calcium in varying degrees of thickness. In Figure 1 there is only a thin film, whereas in Figure 3 the radial stone is

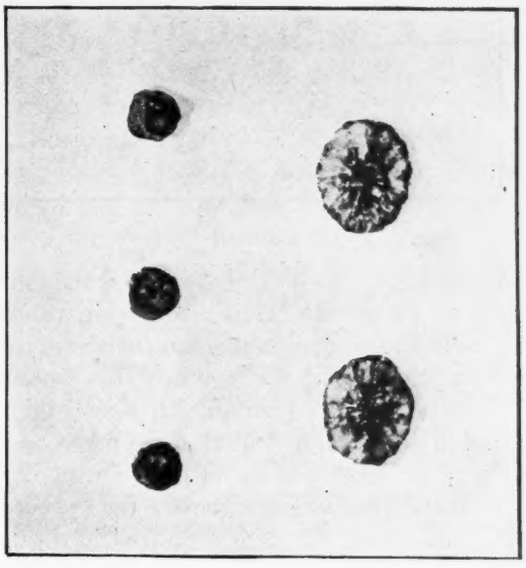

Plate IV.

so imbedded that it forms a mere core. The cross-section of this stone illustrates well the radial arrangement of the pure cholesterin stone covered by Bilerubin-calcium which is arranged in layers.

Plate III shows a small radial cholesterin

stone which formed the core of an enormous stone (the latter illustrated in the broken parts). This stone was removed at operation from the ilium, near the ilio-cecal valve where it was causing obstruction of the bowel.

Plates IV and V each show a radial cholesterin stone plus mixed stones. The radial stone shown in Plate V occupied the beginning of the cystic duct (as is the rule), and was capped by the large stone which filled the gall bladder with the exception of the space occupied by the smaller mixed stone.

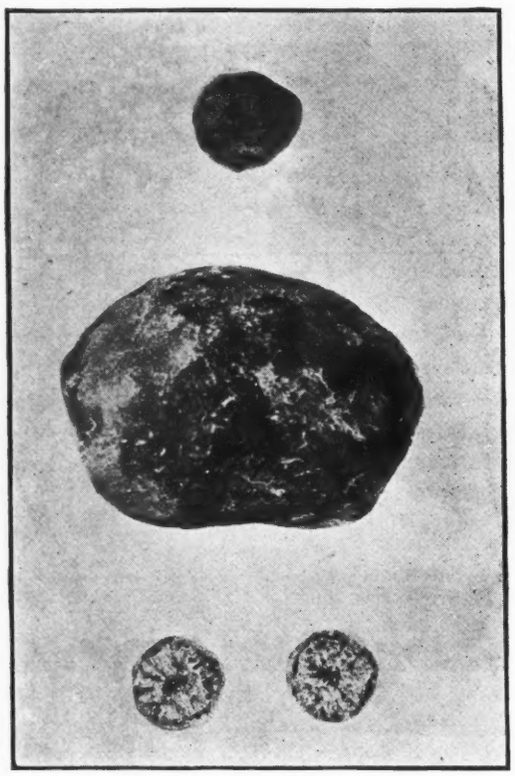

Plate V.

According to Aschoff, the radial stones illustrated in Plates II, III, IV and V, existed in two periods, one of noninfection, without causing symptoms, and the other in the presence of infection with symptoms. Moreover, he claims that the single radial stone precedes the ordinary mixed stones in 50 per cent. of cases.

In our experience the percentage is not so high. However, we were surprised at its frequency upon examining our specimens. Nearly all single stones will prove, upon splitting, to have a radial stone center. In the case of multiple stones considerable search may be necessary as every stone may have to be split. Such a procedure is, of course, practically impossible when they are small and the number is very large.

I am sure that if the "splitting" test were carried out routinely, the frequent finding of a radial cholesterin stone would surprise most surgeons.

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INTESTINAL TOXEMIA AND INTESTINAL STASIS.*

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Intestinal toxemia is a form of blood poisoning induced by the absorption of toxins or micro-organisms from a damaged intestinal mucous membrane. Any delay in the passage of the intestinal contents through the various segments of the intestinal tract exposes the patient to the danger of intestinal toxemia. The fault is digestive—some disturbance, more or less severe and more or less prolonged, of the digestive processes. Of course digestion is in the main due to enzymes, but a small part of it is accomplished by bacteria; certain parts of the food which resist the action of enzymes would not be digested at all were it not for the micro-organisms in the intestine. On the other hand it should not be overlooked that the work of the intestinal bacteria is associated with the production of toxins against which normally the organism must protect itself. The decomposition products of bacterial activity are not all toxic, but in large amount they may have a decidedly toxic effect. Should the protective agencies of the organism, such as the neutralizing effect of the digestive juices upon the toxins, the antitoxic power of the hepatic cells, the detoxicating effect of the internal secretions (thymus, thyroid, adrenals) and of the epithelium, the excretion of intestinal toxins by way of the expiratory air, the urine and the feces—should these, for any reason, fail to act or act inadequately, intestinal toxemia would result. Bacteria and their toxins are believed to pass through the damaged mucous membrane into the wall of the intestine and induce inflammation, with the formation of pericolic membranes, though no conclusive proof has yet been adduced to substantiate this view.

The term "chronic intestinal stasis" as employed by Lane indicates such abnormal delay in the passage of the intestinal contents through a portion or portions of the gastro-intestinal tract as to result in the absorption into the circulation of a greater quantity of toxic or

*Read before the Michigan State Medical Society.

poisonous materials than can be disposed of by the liver or other protective organs. He believes this condition is due to the upright position of the trunk, which induces a prolapse of the viscera and consequent faulty drainage. To resist this displacement, nature reduplicates certain peritoneal tissues, which become firmer and firmer until distinct bands are formed. As a consequence, under unusual or prolonged tension, kinking occurs. The kinks occur at the duodeno-jejunal juncture, the terminus of the ileum, in the cecal region, at the hepatic flexure, the splenic flexure, and the colon-sigmoid juncture.

The factors which contribute to the development of intestinal toxemia are manifold. Even when the condition of the digestive juices is entirely normal, frequent, large and albuminous meals may be abnormally decomposed. This danger is increased if there are secretory and motor disturbances of the stomach or intestine, as in achylia, gastric dilatation, pyloric stenosis, gastroenteroptosis with kinks, constipation, catarrh of the small and large intestine, dilatation of the colon, intestinal stenosis, chronic appendicitis, and parasites. In these cases, nutriment of normal quality in normal quantity may work harm. A further factor may be supplied by the weakening of the defenses of the organism, through infectious diseases, affections of the intestinal mucosa, hepatic insufficiency, anemia, or alcohol.

Even in normal digestion aromatic substances and ptomaine are formed in the intestine, owing to the action of the bacteria upon the proteins. These substances are partly excreted in defecation. If their quantity increases, consequent diarrhea will hasten their expulsion. The residue will be neutralized by the mucosa, assimilated, passed through the liver, and taken up into the circulation, where it will be definitely decomposed by the action of the internal secretions. The end products will then be excreted through the skin, the lungs, and the kidneys. If, then, these products of normal digestion are toxic, the decomposition products of abnormal digestive processes must be so to a much greater extent. The most toxic products are always formed from the proteins, and it is these above all that cause intestinal toxemia.

In the breaking up of protein by the putrefactive process, a number of substances which have a toxic and injurious effect upon the body are produced, and these are absorbed from the intestine. They all belong to what is technically known as "the aromatic series." The best known of these are skatol, indol, and phenol. These aromatic products of intestinal putrefaction have much to do with the production of pericolic membranes, bands and adhesions found in cases of chronic intestinal stasis. They are carried to the liver, where they combine with sulphuric acid, and are excreted in the urine as ethereal sulphates. An excess of ethereal sulphates in the urine becomes thus the measure and gauge of the degree of existing intestinal putrefaction. Indican in the urine has the same significance. The indol is rapidly absorbed from the intestinal tract and carried by the portal blood to the liver, where it enters into loose combination with the liver cells; from this combination it is readily detached, to become united with sulphuric acid; before becoming thus united, however, it is oxidized into indoxyl so that, when united, it becomes chemically a potassium salt known as indoxyl sulphate of potassium. This substance is much less toxic than indol, finds its way into the blood, and is promptly excreted in the urine as indican. In early life the production of indol in the intestine is in general very slight; and there are some older persons also who, even while suffering from disorders of digestion, do not form indol. On the other hand, the production of considerable quantities of indol in the large intestine is a feature of many cases of intestinal putrefaction, and in some cases the quantity formed is large. That indol may be absorbed in considerable amounts is shown by the appearance of large quantities of indican in the urine of persons in whom the intestine contains large amounts of indol (Herter).

We cannot, however, depend upon the presence of indican alone in the diagnosis of intestinal toxemia. Indican in increased quantities is usually present in the urine in acute and chronic gastritis, acute and chronic peritonitis, typhoid fever, dysentery, ileus, carcinoma, cholera, Addison's disease, diseases of the central nervous system, empyema, gangrene of the lung, and all conditions where protein putrefaction is in progress. The findings of indican in the urine is not of itself sufficient to establish the diagnosis, but it has some value in connection with the other signs of intestinal toxemia.

Intestinal toxemia is possible without indican and with a perfectly healthy pancreas, or at least with one so judged to be by the complete digestion of nuclear tissue. Those who believe that there can be no intestinal toxemia without indican in the urine will overlook many cases.

Cholin forms the base of the lecithins which are abundantly present in various animal structures, but is in itself innocuous; it can, however, by the action of bacteria, be transformed into neurin, which is a highly toxic substance. Cadavarin and putrescin are bases and products of protein decomposition.

The external appearance of the patient may be the first indication of the presence of intestinal toxemia. The patient has a sickly expression, a pale yellowish complexion and a morose disposition; forehead and cheeks are prematurely wrinkled and have brownish spots; the lips in comparison with the pale complexion are very hyperemic and swollen. The skin is dry and scaly, the nails soft and fissured. The lumbar glands are very painful and enlarged. At night there is a tendency to perspiration.

There are also digestive symptoms, such as anorexia, dislike of meat, and great thirst. The tongue has a brownish coat, the abdomen is distended, and sometimes the liver is enlarged, especially in children. The state of the digestive organs differs in different individuals, depending upon the presence of ptosis, catarrhs, fermentation, putrefaction, constipation, enteritis membranacea, and parasites. The intestinal flora, also, displays characteristic signs: there is a decrease of the aerobic and facultative anaerobic bacteria and a predominance of the facultative and strict anaerobes (Bacillus mesenterius proteus, putrificus, putridus), which means a flora of protein putrefaction.

The so-called gastro-intestinal crises may occur in which the accumulated enterotoxins are suddenly excreted; these cases are characterized by salivation, periodic vomiting, and periodic diarrhea. The other organs likewise suffer from the influence of the intestinal toxins. There may be cholangitis, severe icterus, and cardiac manifestations such as angina, tachycardia, bradycardia, arrhythmia, cardialgia, neuroses, and lowering of the blood pressure. The lungs may be involved in the form of asthma and bronchitis. Inflammation of the tonsils is of frequent occurrence. The nervous system is responsible for headache, migraine, hyperchlorydria, and mental derangement. Anemia, even in the pernicious form, is not very uncommon. Urine and feces show the signs of increased protein putrefaction in the intestine.

Considering that intestinal toxemia may, on the one hand, be the consequence of increased protein putrefaction in the intestine, and on the other the consequence of insufficiency of the antitoxic action of the various defensive organs on the normal decomposition processes, it follows that the therapy must be twofold, with the object of decreasing the intestinal protein putrefaction to normal or below, and increasing the function of the antitoxic and excretory organs.

In the treatment of intestinal toxemia, the intestinal culture ground on which the bacteria of protein putrefaction thrive should be changed. This is accomplished:

(1) By an antiseptic diet.
(2) By introducing antagonistic bacteria into the canal.
(3) By antiseptic medication.

(1) In order to change the culture ground of the noxious bacteria in the intestine, it is necessary to restrict or exclude among the natural foodstuffs those which favor the development of the putrefactive bacteria, and to prescribe an abundance of those which counteract putrefaction. The foods favoring putrefaction are those that contain protein: meat, fish, eggs, and the flour of lentils, peas and beans. Meat especially increases intestinal putrefaction; the less fresh the meat, the stronger the decomposition. Fish invites putrefaction; egg albumin is less susceptible, but the legumes greatly augment the process. It has also been found that fat given with the food increases protein putrefaction in the intestine.

The antiseptic diet in intestinal toxemia should consist of farinaceous and milk dishes, since milk in all forms, as well as the carbohydrates (with the exception of legumes), inhibits putrefaction. Milk is an antiseptic food, owing to its high percentage of milk-sugar, which liberates lactic acid and succinic acid through the action in the small intestine of the Bacillus coli communis and the Bacillus lactis aerogenes. These acids are capable of preventing the anaerobic bacteria of putrefaction in the large intestine from decomposing the casein of milk and the protein of nitrogenous foods. But pure milk alone is often not well tolerated, and it is therefore advisable to use this article of diet in the form of salicylic milk or as milk soup thickened with flour or other material. The same precaution should be taken with skim milk.

A much greater effect on putrefaction is exerted by the various products of sour milk. The following may be mentioned:

Whey (the clear, transparent liquid residue expressed from milk curd coagulated with rennet or pepsin) is much used as a hygienic bev-

erage and a dietetic remedy. Indeed, special establishments have been erected for "whey cures" in Baden-Baden, Creutznach, Levico, Meran and Weisbaden. In the beginning of the treatment whey is sometimes difficult to digest, but the intestine soon becomes accustomed to it. It may first be taken mixed with mineral water, but later undiluted, gradually increasing the daily quantity. It should preferably be taken on an empty stomach. Whey can also be used to advantage in the preparation of soups.

Buttermilk, owing to its small protein and fat content and its high percentage of milk-sugar and lactic acid, is well suited to the treatment of intestinal toxemia.

Sour milk is much better tolerated than fresh milk, because it does not coagulate in the stomach and thus interfere with digestion. It slightly stimulates peristalsis and duiresis. Fresh cheese, made from either milk or cream, is recommended. Koumiss and kefir are products of the alcoholic fermentation of milk and are beneficial.

Aside from milk, carbohydrates are recognized as the best antiseptic foodstuffs. Among these the best results are obtained with the various kinds of flour and the baked foods made from them, because, owing to their tardy absorption, they reach the lower parts of the intestine, where they gradually liberate their antiseptic lactic and succinic acids. For this reason it is wise to ingest with every protein meal a large quantity of farinaceous food.

In intestinal toxemia protein foodstuffs should be restricted or entirely excluded. The best article among them is eggs. As to fats, fresh fat which comes with the meat should be avoided, while fresh butter is allowed. Farinaceous food and milk products are to be given in large quantities. Thorough mastication is, of course, absolutely necessary. No beverages should be taken with the meals. It is advisable to arrange the daily meals so that food and drink are taken alternately and not simultaneously. After every meal an hour's rest should be taken in the dorsal or right decubital position, without sleeping.

In regard to protein in particular, care should be taken to avoid those that constitute culture grounds for the protein bacteria. These are: bouillon, fatty soups, roast-meat gravy, meat jelly, meat extract, tainted meat, and any meat which is easily decomposable.

In serious cases of intestinal toxemia meat should be absolutely forbidden, while in all cases those that contain much purin should be considerably restricted. The same is true of the legumes.

In regard to farinaceous food, raw or cooked fruit and vegetables, all carefully masticated, may be taken, provided there is no enteritis, while in the presence of considerable intestinal irritation (enteritis, spastic constipation) these coarser articles of diet should be entirely forbidden. The antiseptic effect of huckleberries is entitled to special mention.

(2) The bacteria causing intestinal putrefaction can be attacked not only by dietary measures, but also in a direct way by introducing antagonistic bacteria into the intestine. For this purpose the lactic-acid forming bacteria or the oriental Bulgarian bacillus are available. The proteolytic bacteria may produce their harmful effects in either the small or large intestine; in the former case the introduction of organisms of the Bulgarian type may reasonably be expected to be of benefit, since they tend to localize themselves in the small intestine. If, however, the proteolytic process originates in the large intestine, the common lactic acid bacilli are indicated.

While the primary object of introducing lactic acid bacilli is to inhibit the objectionable activity of proteolytic organisms, it is possible that, in addition to the formation of lactic acid, other products associated with their development may be formed which also act beneficially.

(3) The putrefactive bacteria of the intestine may further be attacked by antiseptic medication. There is no antiseptic strong enough, in doses which would be safe, to destroy the viability of the bacteria in a quantity of fluid equal to that contained in the bowel. For such an effect, Horatio C. Wood states that it would require about 30 Gm. (one ounce) of phenol or 0.3 Gm. (5 grains) of corrosive sublimate.

According to Combe, the principal intestinal antiseptics are: hydrochloric acid; menthol, 2 Gm. (30 grains) a day; bismuth salicylate, 0.6 Gm. (10 grains) three times a day; and ichthyol. The last named remedy, in the opinion of Rodari, is not sufficiently appreciated as an intestinal antiseptic. It is necessary to prescribe it in large doses. Ichthyol should be given in capsules, each containing 0.1 Gm. (2 grains). Rodari gives two such capsules every two hours. This may produce slight stomach symptoms and eructations.

Calomel, resorcinol, creosote and salicylic acid may also be mentioned in this connection.

Putrefactive bacteria can further be unfav-

orably influenced by the administration of laxatives and intestinal irrigations. The principal laxatives available are castor oil, calomel and the salines. Intestinal irrigation is indicated in stasis with intestinal toxemia. Irrigations with 1 per cent. ichthyol are efficacious. Fleiner's oil enemeta has given me better results than any other method of treatment.

In the stimulation of the antitoxic organs, the most important point is to keep the kidneys acting freely so as to hasten elimination. This is best effected by rectal irrigations with physiologic salt solution or by intravenous transfusions.

Many cases of chronic intestinal stasis and toxemia recover completely when the accompanying constipation is properly treated. It is of the utmost importance to decide whether the constipation is of the atonic or the spastic type. The differentiation is not always easy. Patients suffering from spastic constipation are vagotonic. This can be easily recognized by the positive oculo-cardiac reflex, by Herring's phenomenon, and by the pilocarpin test.

Spastic constipation is due to constriction or spasm of a few isolated loops of the intestine, readily demonstrable by the Roentgen ray. The fluoroscope will also show the relaxing effect of a hypodermic of atropin upon the spasm. The enterospasm may be painful or not; in the former cases it is due to neuropathic conditions associated with disease of the abdominal viscera or pelvic organs.

The aim of the treatment of the atonic variety of constipation must be to so improve the muscular condition by dietetic measures as to finally attain regularity of defecation with a normal supply of food. The diet should be large and bulky, rich in insoluble residue, including an increased amount of carbohydrate, and more particularly of foods rich in cellulose.

In the treatment of the spastic variety of constipation, bulky foods are eliminated and a variety of fruits should be given because of their chemical constitution. They stimulate peristalsis, partly because of their fruit acids, and partly because they contain sugar, which tends to increase the fermentative processes in the intestine. Easily melted fats, as well as butter, oil and cream, not only have a mechanical effect, but also act chemically, stimulating peristalsis by means of the great amount of fatty acids they develop.

Petroleum jelly will lubricate the whole gastro-intestinal tract, thus facilitating the passage of the contents. The lubrication of the chyme in the intestine assists in its timely removal in cases of intestinal stasis. After the due administration of this jelly the feces are softened and under the microscope are found to contain minute oil globules. Petroleum jelly of the best quality seems to act equally as well as the Russian mineral oil; it is heavier and therefore mixes more thoroughly with the feces; at the same time its viscosity prevents it from passing through the bowel too rapidly. The jelly, when pure, is not absorbed from the alimentary tract and even in large doses has no poisonous effect. It is useful not only as a lubricant, but also as a means of healing superficial lesions of the mucous membrane.

Duodenal lavage, one to four pints of water being introduced through the duodenal tube, as suggested by Jutte, will often give good results.

The mechanical treatment consists principally in the use of an abdominal bandage which will furnish a suitable support to the relaxed abdominal wall. This treatment acts beneficially by ameliorating the symptoms due to tension or stretching of the mesenteries.

Surgery is now frequently employed for the cure of intestinal toxemia associated with chronic intestinal stastis. A Roentgen-ray examination with the bismuth mixture may show a displaced stomach, a prolapsed colon, kinking of the hepatic or splenic flexures, spasms of different loops of the intestine, or the presence of bands, membranes and adhesions; but such conditions do not imply that surgery is inevitably necessary. So long as motility is not interfered with, there is no absolute indication for surgical intervention. A transverse colon can be displaced anywhere from its normal position down to the symphysis without interfering with motility. The cinematograph shows that such a displaced intestine can empty itself properly even if the angulations at the distal ileum and the hepatic and splenic flexures show absolute kinks. It has been proved that stasis is not due to an abnormal position of the intestine (kink, ptosis or redundant colon) so long as there is no actual mechanical obstruction.

Recent experimental work by Keith (1) explains the mechanism of intestinal movements, and seems to account for the production of intestinal stasis upon a physiologic basis. In his histologic studies he discovered a nodal tissue intermediate between nerve and muscle and interposed between Auerbach's myenteric plexus and the smooth muscle of the intestinal

wall. This intermediate tissue possesses two distinct functions: one, the initiation and regulation of the muscular contractions in the segment of the intestine which it controls; the other, the power of conducting impulses which lead to the forward propulsion of the intestinal contents. Not only do the demonstrable physiologic functions of these "nodes" explain the normal movements of the intestine, but it is obvious that a perversion of the function of any one of them is capable of giving rise to an inhibition of the forward progress of the intestinal contents, with resulting intestinal stasis. In the establishment of this as the physiologic explanation of the mechanism of the production of intestinal stasis, Keith was able to demonstrate the presence of definite fibrotic and degenerative changes in this nodal tissue in segments of the intestine extirpated for the relief of chronic intestinal stasis. From these investigations he concludes that it is improbable that mechanical conditions or derangements of sphincteric action underlie the production of intestinal stasis, but that the true cause is the production of some "block" or disorder in the nodal and conducting system of the intestine analogous to the heart block and other similar disturbances of cardiac function. He does not accept Lane's "drag, band and kink" theory.

By short-circuiting the ileac contents directly into the sigmoid or by the extirpation of the colon, Lane has succeeded in curing coincident pyorrhea alveolaris, tuberculosis, arthritis deformans, nephritis, cystitis, pyelitis, endometritis, salpingitis, exophthalmic goiter, skin disease, colitis, endocarditis, epilepsy, neurasthenia and a host of other diseases. An operation like that of colectomy is an extensive and dangerous one, and seems hardly justifiable in the treatment of such chronic joint diseases as arthritis deformans or the arthritis of tuberculosis. It is surprising and a bit confusing to hear of the cure of so many varied and unrelated diseases attributed to one remedial operation. The connection which is asserted between chronic intestinal stasis associated with intestinal toxemia and the many forms of ill-health which the short-circuiting operation is said to cure, is not convincing. In view of the radical treatment urged by the followers of Lane, and the confidence placed in its not yet entirely tested results, internists will do well to cultivate a sane conservatism. We are not warranted in encouraging surgeons to hazard the operation of short-circuiting and colectomy unless we have a definite organic intestinal obstruction to deal with.

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THE ADMINISTRATION OF SALVARSAN IN CONCENTRATED SOLUTION.

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Although much has, in the past year, been written on the subject of the administration of salvarsan in concentrated solution, only a small percentage, comparatively speaking, has as yet been administered in this manner.

In 1913 Dr. Paul Ravaut at the meeting of the Societé de Dermatologie et de Syphilographie, held at Paris, described a new method of injecting neosalvarsan by means of a syringe. This was the result of a number of attempts to do away with the ill after-effects often following the administration of neosalvarsan, after-effects which Ravaut believed due to the oxidation of the drug during the slow process of intravenous infusion. In this connection he also observed that when saline solutions were used, the neosalvarsan was oxidized much more promptly than in pure water and that, the greater the percentage of salt present, the more prompt the oxidation of neosalvarsan. The use of considerable amounts of distilled water, on the other hand, appeared to him inadvisable because the solutions were then no longer isotonic and there was reason to fear the occurrence of hemolysis. He showed that solutions of neosalvarsan, as usually administered, when mixed in a test-tube with human blood invariably hemolyzed the latter. More concentrated solutions of neosalvarsan, however, i.e., 0.6 in 10 cubic centimeters distilled water never produced hemolysis.

There have been various modifications of Ravaut's method, as the use of boiled water in place of freshly distilled water or the use of freshly doubly distilled water but the principle is the same, namely the use of the drug in concentrated solution.

If it is distinctly to our advantage to use neosalvarsan in concentrated solution and since neosalvarsan, salvarsan and the new product diarsonal are similar in their chemical formulae, why should we not use the last two in concentrated solutions? Fehde was probably the

first to do this, having for several years, been in the habit of injecting 0.6 grm. of Salvarsan in 10 cubic centimeters water and injecting the same intravenously. His results though satisfactory were never published, but his example has been followed by many others with individual variations. Saalfeld of Berlin dissolves 0.3 grm. in 40 cubic centimeters saline solution, alkalinizes it in the usual manner and injects it intravenously. During the past year and a half the writer has been using the concentrated solution of salvarsan, using 0.6 in 30 cubic centimeters fluid.

The process which we use in the preparation of a concentrated solution of salvarsan is as follows:

Into a sterile eight inch test tube about an inch in diameter we place 20 cubic centimeters of freshly distilled water (old distilled water is said to be unfit). This is raised to the boiling point to insure against any possible contamination and allowed to cool to about 140 degrees Fahrenheit, as too high a degree of heat is said to decompose the salvarsan. The contents of an ampule of salvarsan are then allowed to drop on the surface of the water, taking care not to allow any of it to touch the side of the tube because it adheres and it is difficult to get loose. Shake carefully until solution is effected. Before proceeding to precipitate the salvarsan care must be taken that it is all dissolved and that no translucent gelatinous masses of it are held in suspension. If this precaution is not taken serious difficulties will follow. The salvarsan having been completely dissolved, a sterile 15 per cent. solution of sodium hydroxide is added drop by drop. This solution is added in such a manner that it washes down the sides of the tube, and prevents adhesion of the precipitate formed, to the sides of the tube. Upon continuing the addition of the alkaline solution the precipitate first formed is gradually redissolved. This is a critical point in the process. There should be as little excess of alkali as possible in the finished solution. Experience at this point guides the operator so that the last single drop added changes the solution from translucence to a perfectly clear solution. The solution is then filtered through a sterilized paper filter and funnel into a graduated flask also sterile and the filter is then washed with sufficient sterilized freshly distilled water until the entire filtrate measures 30 cubic centimeters.

The writer uses a 30 cubic centimeter Record syringe with a 24 or 26 gauge needle. This is much smaller needle than is ordinarily used and has its advantages in that it can be inserted into a very small vein, especially applicable to females where the veins are usually of smaller caliber.

So far I have given over two hundred and fifty injections by this method without any ill effects and with less reaction than with the old method of using large amounts of fluids introduced by hydrostatic pressure. The greater convenience of the new method to patient and physician is striking.

Strauss uses a 9 per cent. solution which he injects intravenously by means of a Record syringe. He prefers a special double needle, an outer sharp one movable upon an inner blunt one and supplied with a set screw by means of which it can be fixed in any position. With the point of the sharp needle projecting beyond the inner blunt one, the vein is punctured. The screw is then loosened, the blunt needle thrust forward into the vein, and no further injury to the vein is possible. He does not state the number of cases so treated, but says the injections are excellently well borne.

By using a Record syringe the solution is kept entirely free from air or in other words is enclosed; while in using the hydrostatic pressure method it necessarily follows that the solution absorbs a certain amount of air and oxidation takes place. The needle used should be small in caliber, sharp and clean, for by using a small needle no damage is done to the tissues nor do any scars remain at the point where the injection is made.

My experience with the intravenous injection of concentrated solution of salvarsan leads to the following conclusions:

1. The use of concentrated solution of salvarsan minimizes or does away with the ill effects due to imperfect distilled water, thus obviating one of the greatest dangers inherent in the hitherto accepted method.

2. The fact that no apparatus is required except a syringe for salvarsan injections provides a great simplification of technic, not only as regards bulk of apparatus but also as regards sterilization.

3. There is a reason to believe that concentrated solutions are more effective than dilute ones, in that the salvarsan in the former case is more slowly excreted.

4. For the nervous patient, the intravenous injection of a syringeful of medicine is a procedure less taxing than the injection of a large quantity.

5. This new method surpasses the old both in being a great saving in time and also in enabling the operator to dispose with the services of an assistant.

6. One objection to the new method consists in the urgent necessity of a perfect technic in the intravenous injection itself. It is obvious that if the needle does not lie accurately within the vein, so that a small amount of the concentrated solution enters the perivascular tissue, the results may be even more disastrous than with the more dilute solutions. This danger must be faced, of course, but need not deter the skillful operator.

7. The degree of concentration permissible with salvarsan is a 1 to 3 per cent. solution which is perfectly well borne.

8. By the use of a small needle there is less danger of phlebitis or periphlebitis.

HEMORRHAGE DURING THE LATTER HALF OF PREGNANCY.

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Hemorrhage during the latter half of pregnancy may be classified either as accidental or unavoidable. By unavoidable we mean those cases in which the situation of the placenta in the uterine area of dilatation makes it impossible for such dilatation to take place without the occurrence of hemorrhage. The term accidental, if used with the full understanding of its meaning, may be applied to all other cases in which the placenta is situated above the area of dilatation.

These terms were first used to classify hemorrhage of this period by Rigby in his Thesis "An Essay on the Uterine Hemorrhage which Precedes the Delivery of the Full Grown Fetus," pubished first in 1776. While to-day we do not consider his classification of accidental hemorrhage as absolutely correct, still the term may be used to advantage if we consider it as applied to ablatio placenta, to rupture of the uterus, or of the circular sinus. Ablatio placenta, or premature separation of the normally implanted placenta, is the most frequent cause of accidental hemorrhage, the separation being of varying degree, either partial or complete.

Our knowledge of the hemorrhage of pregnancy up to 1664 was largely the result of the teaching of Hypocrites that ante partem bleeding was always due to a separation of the placenta from the fundus uteri, where it was invariably attached, and when the placenta was found at the os, prolapse had occurred. Paul Portal, proved these ideas to be wrong and stated that at times the placenta was adherent to the lower portion of the uterus, in other words, a condition of placenta previa existed. Rigby's article probably left the deepest impression on obstetric literature of the day, but in all probability his cases of so-called accidental hemorrhage were our placenta previa lateralis and naturally the line of demarcation between placenta loosened in the process of the dilatation of the os, placenta previa, and ablatio placenta, must be an arbitrary one. It must not be lost sight of that sometimes placentae may so encroach upon the neighborhood of the retraction ring that slight separation takes place after retraction is marked and hemorrhage appear late in labor. A correct diagnosis is only possible by post partem inspection of the membranes.

As to the frequency of occurrence of premature separation of the placenta, it is difficult to make an estimate, as many cases are unrecognized. Churchill, about 1840, found in 68,982 labors obtained from various sources, 85 accidental, and 174 previal hemorrhages. Based on the statistics of Broadhead and the Chicago Lying-In Hospital, Holmes estimates the frequency of the condition as one to two hundred, as of pathologic interest and one to five hundred for clinic importance. As to the occurrence of cases of totally concealed bleeding no statistics are available. They are unusual and probably not often recognized, Goodell's and Holmes cases showing only 113 reports. Probably many sudden deaths are due to this form of hemorrhage.

The causes of premature separation of the placenta may be considered as exciting and predisposing. Exciting causes may be falls, blows upon the abdomen or elsewhere, violent exercise, coitus, a short umbilical cord, and even the condition of the mind itself. While these conditions may have some effect, that effect has probably been very much exaggerated, for without some coexisting pathological conditions these factors would seldom be effective. These pathological or predisposing conditions are the important factors. Endometritis of a chronic character is probably the most frequent cause, and multiparae are most frequently affected with this disease. The same pathological germs which produce inflammation in the multiparae are found during pregnancy, although the inflammatory condition usually precedes pregnancy.

Gonorrhea is a common factor. Some cases in which placental infarcts and hemorrhage occur are found associated with chronic nephritis. Syphilis of the placenta and acute infections with hemorrhage in the decidua have been noted. Degeneration of the decidua, myometritis, and even arterio sclerosis and Basedows disease have been mentioned as causes.

Hemorrhage is the most frequently noted symptom of premature separation, and naturally signs of blood loss must be the most constant feature. Blood may escape from the uterine cavity. Nausea or vomiting may occur at the beginning and be followed by general or localized pain in the abdomen. Uterine distension may be noted or a tumor mass be found, and often for a brief time violent foetal movements occur. Examination showing the absence of the condition of placenta previa, makes the diagnosis evident. Our prognosis in these cases depend upon the amount of hemorrhage, the shock, the relation of the condition to labor, and the treatment.

The mild cases must be kept under very close observation and absolute rest and quiet should be the main features of the treatment. In severe cases the contents of the uterus must be removed as rapidly as possible if the os is sufficiently dilated. In case there is no dilatation and labor has not begun some means of inducing labor must be used. The cervix must be dilated instrumentally or by the introduction of the Barnes Bag, and after dilatation complete delivery is done by forceps, craniotomy or version. The last should be used only in unobstructed breach presentations. The placenta should be immediately removed and if the bleeding persists the uterus should be packed at once.

The predisposing factors in placenta previa are much similar to the preceding condition. Chronic endometritis, multiparity, sub-involution and twin pregnancy are all considered provocative of placenta previa, and these conditions themselves are frequently associated. According to De Lee the active causes are primary low insertion of the ovum, near the internal os or on its edge. The development of the placenta in the reflexa and its coming to lie over the os. Owing, perhaps, to endometritis, anomaly of the ovum itself, or deficiency of the cilia, the ovum slips down the uterine cavity and does not become attached until it reaches the region of the internal os. In placenta previa hemorrhage is the principal symptom. There is usually no pain, but just a persistent bleeding. It usually comes on in the latter months of pregnancy and occurs at intervals with increasing frequency. The probability is that many of the cases of so-called premature separation of the placenta are, in fact, placenta previa itself, in which the placental overlapping in the dilating portion of the uterus, is of moderate degree.

Placenta previa as a complication at the time of labor, would be much more common if it did not so frequently interrupt pregnancy, abortion and miscarriage occurring in from 40 to 60 per cent. of cases. It is three to six times more common in multipara than in primipara and according to Hirst is most frequently met in the working classes. Fibroid of the uterus and carcinoma of the cervix are sometimes causative factors, undoubtedly because of the associated change in the endometrium. We may say that placenta previa occurs about once in twelve hundred cases.

We usually distinguish four types of placenta previa, central, partial, marginal, and lateral. In the first type the central portion lies over the internal os. In the partial the great part of the placenta lies on the right internal segment, but completely covering the os. In the marginal type a small margin projects while in the lateral the placenta occupies one side of the lower segment, with only a small portion in the canal of the cervix.

Hemorrhage occurs early in pregnancy from the central and partial types. Danger is most marked from the bleeding and from the obstruction offered by the placenta at the time of labor. The most common forms are the marginal and lateral types, while the central form is rare and extremely dangerous.

While bleeding may occur as early as the second or third month, usually its occurrence is during the last three months. There may be a sudden flow of blood without apparent cause. The flowing comes on in larger amounts and at more frequent intervals as pregnancy continues. Hemorrhage may not occur in some cases until labor has begun. Severe hemorrhage during pregnancy, if the pregnancy is uninterrupted, is followed by profuse flowing at the time of labor. Infrequently the bleeding may result from a rupture of the circular sinus itself. Hirst states the oblique and transverse presentations are ten times more frequent, and breech presentations four times more frequent in conditions of previa. There is a great liability of infection in these cases, and in a large per cent.

adherent placenta is found, and post partum hemorrhage results.

Pregnancy should be terminated as soon as the diagnosis of placenta previa is made. Hemorrhage occurring in the latter months of pregnancy is always dangerous, although there seems to be less danger in those occurring before the eighth month than after that date.

If the cervix is found sufficiently dilated version may be performed and a leg drawn down as a tampon, after which extraction may be done. In those cases in which the cervix is not dilated packing and tamponade may be used and if necessary the Romberg tube applied temporarily to control hemorrhage. In cases of lateral or marginal form the Vorhees or Barnes bag may be used to good advantage to produce cervical dilatation and to act as a tampon. After dilatation is complete, version and extraction may be done or forceps applied.

Cesarean section has been considered in these cases and under certain circumstances is a justifiable procedure, especially in young and uncomplicated cases. In hospital cases the maternal death rate is given as 5 per cent., while the foetal death rate is about 50 per cent. It is obvious therefore, that at the present time, the treatment of placenta previa can be very much improved upon.

Hemorrhage may occur late in pregnancy from certain cases of ectopic gestation in which the diagnosis has not been made earlier. The external bleeding in these cases is not profuse, and is associated with other symptoms which lead to the diagnosis which is readily verified by examination. In these cases there has, as a rule, been bleeding present earlier in the course of the pregnancy, beginning during the first few months. The pain associated with tubal rupture, and the attendant shock may be similar to premature separation of the placenta, but the latter occurs most frequently in the latter months of pregnancy. A thorough examination should clear up the diagnosis in these conditions. In all cases of ectopic pregnancy immediate operation is the treatment indicated if the patient is in operable condition.

A comparatively unusual source of hemorrhage in the latter part of pregnancy is that occurring from rupture of the uterus. This accident usually occurs during labor, and especially after long and difficult cases where obstruction to the exit of the child exists. However rupture may occur before labor has begun, in cases where the uterine muscle has been weakened by previous operative wounds, or by disease of the muscle itself. Long continued pressure of the foetal part upon a limited area of the uterine muscle may destroy the nutrition and tone of the muscle at this point and rupture may result. These tears are usually transverse and begin in the lower uterine segment. Sudden sharp pain may be felt and hemorrhage occur from the vagina, while the patient presents an appearance of shock. Rupture occurring at this time must also be differentiated from ablatio placentae. Examination will usually reveal the presence of rupture by the finding of the foetus, or foetal parts, alongside of the contracting uterus. Tears of a small degree may not be noticed until after delivery of the child unless infection occurs. Incomplete rupture is not so fatal as those in which the peritoneum is involved and the result depends upon the passing of the uterine contents into the abdominal cavity. In the incomplete form, irrigation and drainage may suffice to save the patient; in more severe forms abdominal section is indicated at once. In 193 cases treated by abdominal section the maternal mortality was only 55.3 per cent. according to Schultz; the foetal mortality is about 90 per cent. If the tear is small the child may be taken by high version, forceps, or craniotomy and if possible the placenta removed through the vagina, but if difficulty is experienced it should be removed through an abdominal incision.

CONCLUSIONS.

In conclusion we may state briefly:

1. Hemorrhage occurring in the latter half of pregnancy may be either accidental or unavoidable in type, and in nearly every case is associated with some pathological condition of the uterus or of the ovum.

2. By an accidental hemorrhage we mean hemorrhage occurring from the separation of a part or all of the placenta from its normal situation which is above the contraction ring.

3. By unavoidable hemorrhage we mean placenta previa in all its forms.

4. It may be at times extremely difficult to make a differential diagnosis between the lesser forms of placenta previa and premature separation of the placenta.

5. The treatment of accidental hemorrhage depends upon the severity of the hemorrhage and the urgency of other symptoms.

6. The treatment of placenta previa is control of hemorrhage, immediate evacuation of the uterus as soon as diagnosis is made, and with

minimum amount of traumatism to the child.

7. Various methods may be employed to empty the uterus. When dilatation is complete the membranes may be punctured and version and extraction may be performed.

8. If dilatation is not complete one of the most satisfactory methods of dilating the cervix in my experience, has been the use of the dilatating rubber bag. Ceserean section should be considered under favorable circumstances when it can be performed by a competent surgeon.

9. An effort should be made to reduce the foetal mortality which is now approximately 50 per cent.

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ERRORS IN DIAGNOSIS.—A CASE AND ITS LESSONS.

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H. N., colored, aet. 27, married, by occupation a teamster, was admitted to Harper Hospital, Oct. 9, 1916, friends giving the following information: Family and personal histories were practically negative. Three children were living and well, wife having had no miscarriages.

The patient had had no illness in the last ten years and his present illness was said to date from an injury ten days prior to admission, when a bale of hay falling from his wagon had struck him on the head. Patient had said that it did not hurt him much and he had not been unconscious, but had complained of frontal headache from then on for one week. Then had an attack of vomiting, but he had evinced no abdominal pain or symptoms.

Three days prior to admission, for a short time, patient was apparently delirious and periods of delirium recurred until he became unconscious the day before his admission to hospital.

His habits were said to be fairly good. His wife later gave a history of rather frequent cramplike abdominal pains, of late, alleging that some three weeks prior to admission he had once vomited and had to get off his wagon.

Cardio-respiratory, gastro-intestinal and genito-urinary histories were otherwise negative. A week before admission patient was alleged to have had some fever, but none for few days prior to admission.

Examination showed a well developed, well nourished colored man, quite unconscious and having at times spasmodic contractions of the diaphragm. Skin showed few minor scars; examination of the special senses was negative; chest negative; no cardiac abnormalities, pulse entirely rhythmic, and of fair volume and tension. There seemed to be slight left iliac tenderness; kidneys, spleen and liver not palpable. Reflexes of arms present and normal; pupils were equal and normal in size, and reacted normally to light. Jaw reflex was normal. There was some rigidity of the neck. Cremasterics were absent. Patellar and Achilles jerks were present, and thought to be a trifle more active on the right side. There was no clonus, Babinsky, Oppenheim or Gordon reflex. There was well marked Kernig sign on both sides. Motor power could not be tested. Opthalmoscopic examination was negative

October 10, hemoglobin was 88 per cent. and white blood-cells 9,000. Widal reaction was positive and the surgeon who had examined him referred the patient to the medical staff with the advice that he had an infection and was not a surgical case.

October 11, lumbar puncture showed spinal fluid

under normal pressure and containing 1,800 red cells per cubic centimeter.

October 12, patient developed clonus in both ankles, but returned to consciousness and seemed better.

October 13, spinal fluid again found bloody, but tests for Urobilin and Wassermann were negative. Patient talked fairly clearly and again attributed all of his ills to the injury received ten days prior to admission—was quite positive that he had been well before that time. The temperature curve was quite irregular, but not at all typical of typhoid.

October 14, slight clonus still present, involuntary urination and defecation. Pain sense not impaired, no proximal or distal ataxia. Reflexes in arms and legs slightly exaggerated, stereognostic sense was good.

Diagnosis was hazarded of probable fracture of base of skull with hemorrhage pressing on the motor tract in the basilar region. A dissenter from the diagnosis, the writer, impressed with the well-marked Kernig, cervical rigidity, etc., believed that an infectious meningitis was responsible for the clinical picture.

October 16, the blood-count showed; white blood-cells, 27,000, differential, polymorphonuclears 83.2 per cent., large mononuclears 3.6 per cent., small 12.2 per cent. The patient died October 18.

There had been two hemorrhages two or three days before death, of which due account had not been taken. They were thought to have been due to excoriations of the patient's skin from scratching himself about the scrotum and anus. As a matter of fact, they were hemorrhages from the bowels; the source of blood should have been more carefully sought and had we not lost sight of our positive Widal and not been led astray by the specific account of injury, to which patients and friends attributed all his ills, we should have better anticipated the findings of the autopsy.

This revealed ulcers in all the lymph follicles of the colon and several of the lower Peyer's patches were ulcerated. The spleen was not enlarged. The brain and cord were congested but no hemorrhage or abscess was found. There were patches of broncho-pneumonia in left lung and an old tubercular focus in the right lung. The autopsy was otherwise negative. The patient died of typhoid.

Here we neglected to give due significance to our positive laboratory findings, and were unduly diligent in striving to correlate nervous symptoms with the history of trauma.

1501 David Whitney Bldg.

The Phenolsulphonephthalein Test.—It has been assumed that excretion of less than 60 to 80 per cent. of phenolsuphonephthalein in 2 hours is an indication of renal insufficiency. It has been found, however, that in certain experimental conditions, phenolsulphonephthalein may be destroyed in the body and therefore not appear in the urine although the kidneys function normally. If this condition is found to occur in clinical cases the interpretation of the tests may have to be limited to this: an excretion of 60 to 80 per cent., i. e., a positive result, within two hours after the injection of the phenolsulphonephthalein is evidence of satisfactory renal activity (*Jour. A.M.A.*, Feb. 3, 1917, p. 379).

Firolyptol Plain and Firolyptol with Kreosote.—The Council on Pharmacy and Chemistry reports that Firolyptol (The Tilden Company) is said to be composed of eucalyptol 10 drops, cottonseed oil one-half ounce and Firwein enough to make one ounce, and that, as the composition of Firwein is secret, the composition of Firolyptol is also unknown except to the manufacturers. Firolyptol with Kreosote is said to contain, in addition to whatever may be the component parts of Firolyptol, 10 minims of creosote to each ounce. The advertisements for these two preparations seem to have for their keynote the assertion that cottonseed oil is a particularly valuable nutriment and that when combined with the constituents of Firolyptol and Firolyptol with Kreosote it becomes particularly valuable to the tuberculous. The Council discussed the extravagant claims made for these proprietaries; reminds that food and fresh air, not drugs, constitute the fundamentals of the treatment of tuberculosis; and finds that neither of the products is acceptable for New and Nonofficial Remedies (*Jour. A.M.A.*, Feb. 17, 1917, p. 564).

Fate of Trypsin in the Stomach.—Judging by recent experiments, it appears that the proteolytic enzyme of the pancreas isolated as trypsin is capable of withstanding a rather long digestion in presence of hydrochloric acid and pepsin provided that sufficient protein is present to combine with all or a part of the acid and so bring the free acid down to a certain level. From the observations it seems possible that some tyrptic digestion may occur within the stomach when the free acid is low from combination with protein. The results do not, however, even remotely suggest that the administration of a few grains of the various commercial products claimed to contain trypsin or pancreatin would have the slightest therapeutic significance (*Jour. A.M.A.*, Feb. 17, 1917, p. 554).

TRANSACTIONS

OF THE

Clinical Society of the University of Michigan

Stated Meeting, January 3, 1917

The President, CARL D. CAMP, M.D., in the Chair
Reported by REUBEN PETERSON, M.D., Secretary

OCULAR CHANGES IN MULTIPLE SCLEROSIS.

WALTER R. PARKER, M.D.
(From the Ophthalmologic Clinic, University Hospital, Ann Arbor, Michigan.)

I wish to report a case of multiple sclerosis, showing characteristic eye symptoms and to conclude with a summary of the eye findings commonly met with in this disease.

Mrs. B., aged 32, gave a history of double vision coming on fifteen years previously, followed by partial failure of distant vision and diplopia appearing during an attack of nervous prostration, which symptoms have recurred at various intervals since that time. At the present time she complains of headache, uncertain gait, sometimes double vision and blurred distant vision.

Family History.—On the mother's side she has an epileptic uncle and an asthmatic aunt. She was one of three children, and had all the contagious diseases of childhood excepting diphtheria.

Personal History.—Sixteen years ago she experienced some difficulty in the use of her right arm which receded and two years later recurred in a more exaggerated manner. She says that the arm was completely helpless for a number of months and again recovered. The nystagmus is about six years duration. Insecurity upon her feet dates back two years. At the present time she has some loss of coordination in all four extremities with a tendency to spasticity in the left arm and both legs. The deep reflexes are unequally exaggerated throughout the body. There is a distinct tendency to ankle clonus and extremely active Babinski on both sides. Sometimes she walks with freedom but for the most part her gait is rigid and tottering.

Examination.—Vision in the right eye 6/60, with correction 6/12; left eye 6/21, with correction 6/12.

There is a marked nystagmus in the right eye present constantly and nystagmus on motion in the left eye, power of convergence limited, pupil moderately dilated, but reacts to direct and consensual stimulation, and in accommodation.

Ophthalmoscopic Examination.—Both nerve heads pale, otherwise negative.

Examination of the muscles showed a left hyperphoria of 1°, esophoria for distance of 3½°, exophoria of 9° in accommodation.

Field of vision showed bitemporal contraction of form, with a marked concentric contraction for colors, with some interlacing of blue and red. There are also numerous areas of partial scotomata, most marked in the temporal fields. Fig. 1.

Ocular Changes In Multiple Sclerosis.—In multiple sclerosis, the eye symptoms appear as disturbances of vision and of the extrinsic muscles, also as nystagmoid movements of the globe.

The visual disturbances depend, as Uhthoff has shown, upon an interstitial neuritic change in the optic nerve, optic tract and as far back as the occipital lobe.

The optic nerve may become involved at any stage of the disease. It may show changes that constitute one of the earliest manifestations of the disease. In fact the eye changes may precede all the other symptoms for several years. The patient may give a history of a limited period of impaired vision which entirely cleared up. The neuritis may be either papillary or retrobulbar, very rarely an outspoken choked disc.

The atrophy is not complete as in tabes and usually the affection is one-sided. One eye may recover and after a time the other become affected. The process may remain stationary for a long time. Occasionally a diffuse or temporal atrophy will result, leading to a permanent change, but rarely, if ever, does complete blindness occur. In fact, under proper treatment,

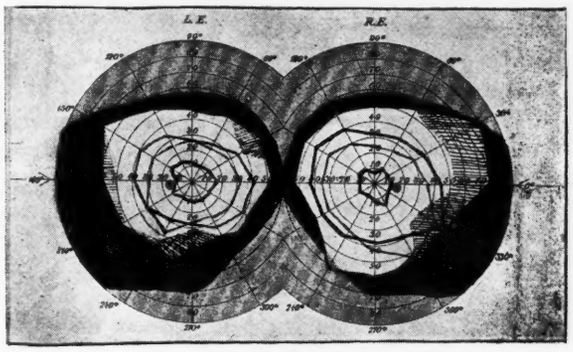

Fig. 1. Visual Field from Case reported.

improvement has been reported in about 50 per cent. of the cases. When the atrophy is secondary to a neuritis, the nerve may show evidences of the previous inflammation. The change in the optic nerve may develop quickly or be very insidious in its onset. In the acute forms the central vision may be greatly reduced and later almost completely recover, variation in the amount of amblyopia being quite frequent.

The visible ophthalmoscopic changes, which occur in about 50 per cent. of the cases, often bear no direct relation to the impairment of vision. The vision may be markedly impaired in spite of an absolutely negative ophthalmoscopic finding or the disc may appear considerably atrophied and still the central vision not be correspondingly reduced. Occasionally compete recovery occurs, but as a rule a distinct amblyopia persists. Lasting blindness is rare.

There is no regular narrowing of the visual field. There may be an irregular peripheral contraction, a central scotoma, or multiple scotomata. The scotomata may be relative or absolute for form or for color. More rarely a ring scotoma may be present. As the case improves the fields may become quite normal, although usually the defect becomes permanent. Fig. 2 shows characteristic multiple scotomata often seen in these cases.

When the visual disturbance takes the form of a central scotoma, the differential diagnosis between multiple sclerosis and retrobulbar neuritis may be difficult, especially when the latter is not due to chronic intoxication, has a sudden onset, and shows analogous fluctuations in intensity. It should be borne in mind in such a case that central scotomata are much more common in retrobulbar neuritis than in multiple sclerosis, and that in the latter disease the central scotoma is usually relative while in retrolbulbar neuritis it is ordinarily absolute Multiple sclerosis is present in about 3 per cent. of all retrobulbar inflammations of the optic nerve.

While true nystagmus is rarely present, the nystagmoid movements constitute one of the most important of the muscular symptoms of multiple sclerosis. They are analogous with the intention tremor of the remaining muscles and show especially in extreme positions of the eye.

Disturbances of the pupillary function, even variations in the size of the pupil are very rare in multiple sclerosis.

The palsies of the eye muscles occur in about 20 per cent. of the cases. They are nuclear or fasicular in origin, and practically always partial. They are, therefore, present in one or both eyes and often symmetrical. An ophthalmoplegia externo may be present but no cases of ophthalmoplegia interno have been observed. Not infrequently there will manifest itself in this disease, paresis of the associated movement of the eyes, of convergence, or an ophthalmoplegia externo as well as partial paresis of the oculomotor nerve. The oculomotor palsy is nearly always partial, while the abduscens frequently becomes completely paralyzed. The palsies of the eye muscles may recover as in

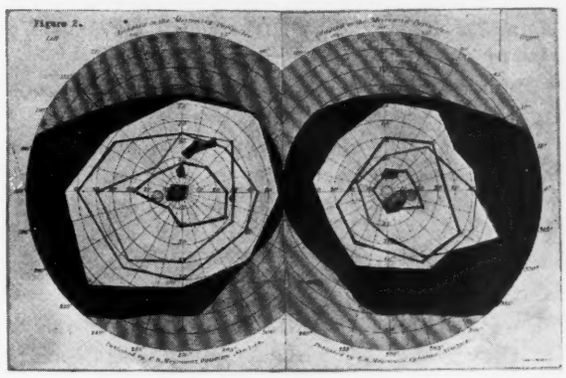

Fig. 2. Field taken from Case of Multiple Sclerosis showing Multiple Scotomata.

the case with all symptoms of multiple sclerosis, but as the muscles are as a rule affected late in the course of the disease, the loss of function may be lasting.

Occasionally there may be present in mutiple sclerosis the most severe general symptoms of brain tumor, including the choked disc. In such a case independent spinal cord symptoms,

as urinary disturbances and areas of anesthesia, may clear up the diagnosis.

Hysteria and multiple sclerosis are very frequently confused, especially when the latter occurs in a young girl. The eye symptoms alone can clear up the diagnosis in some cases.

DISCUSSION.

DR. CARL D. CAMP: Dr. Parker's paper has interested me greatly. I think the frequency of multiple sclerosis is very much underestimated in America. In Vienna and in Germany, more especially in the former, it is regarded as the most frequent of the organic nervous diseases, more frequent than tabes. In our clinic here last year we diagnosed multiple sclerosis 51 times, tabes dorsalis 98 times. The diagnosis is so extremely difficult in many cases that I would not be surprised if we had missed half of the cases of multiple sclerosis which we have seen. We have either diagnosed them as some other disease, or been forced to record the diagnosis as "not made." Considerable misconception arises probably from the fact that Charcot described a triad of symptoms as characteristic of the disease,—scanning speech, nystagmus and intention tremor. Most physicians diagnose the disease on that basis. As a matter of fact, probably not more than 30 per cent. of the cases show this triad of symptoms. Oppenheim has called attention to the purely spinal type of multiple sclerosis. I have seen cases that have come to necropsy from state hospitals for the insane in which apparently there was purely a mental clinical picture, and the examination of the brain postmortem, showed the cause of the mental symptoms to have been multiple sclerosis. On account of this difficulty in diagnosis, any assistance which we can get from ophthalmoscopic examinations or any examination that the ophthalmologist may make, is, of course, very valuable. One must remember, however, that there are many cases of multiple sclerosis in which there are no visual or ocular changes, just as there are other cases in which the visual or ocular changes constitute practically the entire clinical picture. It is important to make the diagnosis of multiple sclerosis because it is a disease which can be much benefited by treatment, and it may be, in some cases, cured.

DR. R. BISHOP CANFIELD: I was interested in what Dr. Parker had to say about nystagmus in multiple sclerosis. In that connection I would like to ask Dr. Parker how the nystagmus compared with the difficulty in vision. Was it most marked in those cases in which the difficulty in vision was most marked? I should like to call attention to the fact that one can differentiate between an intention tremor and a true nystagmus. There are definite ear findings in multiple sclerosis one of which is a nystagmus and that is purely of a vestibular type. I would like to ask Dr. Parker whether the nystagmus which he notes frequently is of the vestibular or auricular type. In the cases which I have examined in which typical nystagmus was present either as the result of some lesion in the vestibular tract or farther forward, not only a nystagmus but a well defined interference with the cochlear tract was also present. I dare say that I have examined some of the cases which Dr. Parker has also examined in this clinic, and in some of them the nystagmus was no doubt due to lesions posterior to the posterior longitudinal bundle, while in others it was distinctly of an auricular type.

DR. GEORGE SLOCUM: Most writers give the relative frequency of nystagmus in multiple sclerosis as about 70 per cent. of all cases. Of these cases 20 per cent. are stated to be true nystagmus, while the remaining 80 per cent. are said to be present on ocular movements only. While pupillary symptoms are not prominent miosis sometimes occurs, this symptom being present when there is considerable irritability to light.

Dyschromatopsia has frequently been noted in our cases and partial scotomata when present have usually been for red and green. These changes in the visual fields may have considerable diagnostic value when found in connection with other symptoms of multiple sclerosis. As stated by Dr. Camp the eye findings may often be of great assistance in the diagnosis of this disease.

DR. PARKER: In regard to the frequency of multiple sclerosis, I am glad Dr. Camp spoke of that point. Unquestionably it is the one nervous disease that comes to us first, more often than any other. It is not an unusual thing to see these patients in an ophthalmologic service before they have sought advice for other symptoms. The one other general disease where we are consulted first is perhaps nephritis, the loss of vision from albuminuric retinitis being the symptom that leads the patient to consult us. As the result of treatment in multiple sclerosis is much better in the cases which are cared for early, an early diagnosis is most important.

With regard to Dr. Canfield's question, in our own cases only about one-fourth show vestibular nystagmus, the other 75 per cent. of the ocular type. Our cases of multiple sclerosis showing nystagmus have not been classified with reference to the visual acuity and I am unable to say whether it has been more defective in the cases showing vestibular nystagmus than in those of the ocular type.

REPORT OF TWO CASES OF BLADDER TUMOR.

LOWELL L. YOUNGQUIST, M.D.
(From the Genitourinary Clinic, University Hospital, Ann Arbor, Michigan.)

The occasion for reporting these two cases is not so much on account of their infrequency, but rather, because surgery of the bladder, directed toward the removal of new growths, is still in its developmental stage, and because the end results obtained point favorably to the

operative and postoperative methods used in these two cases. One is impressed by a brief review of the literature, that at the present time there is no generally accepted method of interference. As evidence of this we find as many methods as there are authorities. One recommends the X-ray, another fulguration, others rely upon the operative cystoscope while a few advise only a radical procedure.

As a matter of historical interest, Warner, in 1747, successfully operated for a bladder tumor from above. Guyon is credited with the suprapubic method of approach. Franz was the first to advise total removal of the bladder. Brandenhauer in 1887, was the first to carry it out, however, unsuccessfully. In 1888, Pewlik made a successful total cystectomy. In this same year, Rydygier advocated the abdominal mode of attack. Yet too critical judgment cannot be passed upon the results of these earlier operators, in view of the advances made in diagnostic, operative and postoperative methods since their time.

In the diagnosis of these cases in general, one resorts to inspection, percussion and auscultation, not only as regards the size, shape and location of the tumor itself, but also any accompanying glandular involvement. A careful examination of the urine, and particles of tissue passed with the urine, also often give valuable information. And finally, the indisputable evidence is gained only by cystoscopic examination of the bladder interior. Having satisfied ourselves, by these methods, that the bladder tumor exists, it is equally important for favorable end results to become acquainted with the patient's general condition, including renal functions, blood pressure, blood urea, Wassermann, etc., before considering any operative procedure.

There are only four avenues of approach: The perineal, the pararectal, the vaginal and the suprapubic. The last is the best for the removal of primary growths of the bladder, as it admits a free exposure of the interior of the bladder, with sufficient room for accurate work, is by far the easiest method of approach and there is less danger of local postoperative complications.

The technic of the operation is briefly as follows, considering only those cases which require extraperitoneal subtotal cystectomy:

1. The bladder is thoroughly irrigated and distended with saturated boric acid solution, the catheter being left in place and clamped.

2. The field of operation is prepared and the patient placed in Trendelenberg's position.

3. A median incision is made, extending upward from the pubes halfway to the umbilicus. A transverse incision is made across the rectus and the fascia of the rectus so as better to expose that part of the bladder involved.

4. The prevesicle fat and peritoneum are gently stripped upward exposing the whole bladder.

5. The point of incision into the bladder is located, edges caught with a double tenaculum, and long retractors inserted into the bladder. The tumor in this way is exposed. A wide removal is now affected, through all the coats of the badder. It may be necessary to use pedicle clamps during this part of the operation. The bladder is thoroughly sponged and a careful investigation made for further pathology. Especially is this necessary in villous papillomata, which type of tumor readily attaches itself to other parts of the bladder and in this way, gives rise to new tumors.

6. The bladder wall is then tightly closed with a double row of sutures, and the remaining steps of the operation are the same as for the closure of the wall in any abdominal operation, with the exception that a small cigarette drain is placed in contact with the lower angle of the bladder incision, to care for any bladder leakage.

7. The special points in the postoperative care are:

   a. A permanent catheter to prevent distention of the bladder.
   b. Daily irrigation of the bladder with small amounts of boric solution.
   c. Special measures to prevent urethritis and stoppage of the catheter.

The first case is that of a woman, Mrs. S H., married, age 42, who entered the genitourinary clinic on May 25, 1916, complaining of weakness, inability to be up and about, and bloody urine. The family history is negative. There is nothing of note in her personal history and her menses have always been regular. She was married at 22, and has had six pregnancies, with two miscarriages and two abortions, attributed to pernicious vomiting. There is no history of bladder disturbance up to the onset of the present illness. In December, 1914, the patient for the first time noticed frequent nocturnal micturation, the urine being bright red in color at the time. After being present for ten days, these symptoms disappeared as suddenly as they had appeared and the patient was apparently well, until the second attack, which occurred in February, 1915. During this second attack, small amounts of blood were passed in the urine inter-

mittently for six weeks, when the symptoms again disappeared. A third attack of hematuria occurred in the early part of July, 1915 and lasted for about a month. Between July and November, 1915, blood occurred in the urine but three or four times, lasting a day each time. During all these attacks and in the intervals between, the patient felt perfectly well, and has been able to do her work. In December, 1915, for the first time she noticed that she was passing large clots of blood in the urine, which continued up to the time of entrance to the University Hospital in May, 1916. During this latter attack, the patient was bedridden and lost thirty pounds in weight. The physical examination of the patient upon entrance showed a marked stage of exhaustion, a severe secondary anemia, with a blood count of 1,860,000 reds, 4,500 whites and 20 per cent. hemoglobin. Her Wassermann was negative. There were marked hemic murmurs over the precordia. The urine was loaded with albumin, and showed many red blood cells, white blood cells and casts. Her kidney functional test showed 20 per cent. and 10 per cent. the second hour, a total of 30 per cent. Cystoscopic examination showed papillomatous growths, one in the region of the right ureteral opening, the other mostly on the left side and low down. X-ray of the kidneys was negative. Transfusion could not be arranged, no donor being procurable. The patient was placed upon a strict regime directed toward her general condition, and in addition received daily irrigations of the bladder with 10 per cent. hot antipyrin solution. During her last month in the Hospital she received interval fulgurations with the hope of removing the papilloma on the right side, and as she refused operation palliative cauterization of the carcinoma was done and hemorrhage from the tumor controlled. As a result of this treatment the patient's condition rapidly improved, she was no longer a bed patient, her hemoglobin increased to 85 per cent., her hematuria stopped, she was stronger and gained fifteen pounds in weight. On July 27, 1916, cystoscopic examination showed the tumor on the right side of the bladder to be much smaller and the patient was discharged against our advice.

The patient returned to the Genitourinary Clinic on September 29, 1916, stating that at times, during her absence, she had had recurrences of her former symptoms but her general condition had apparently not changed since her discharge in July. Upon cystoscopic examination the papilloma on the right side of the bladder had entirely disappeared, but that on the left side was still present. This latter growth was fulgurated weekly until November, without any marked change. On November 7, 1916 the patient was operated upon and the tumor removed. The pathologic diagnosis of the tumor by Dr. Warthin, was: Carcinomatous transformation of a papilloma. This patient made an uneventful recovery and was discharged seventeen days after operation. She was advised to return for observation.

The second case, Mrs. D. H., married, aged 40, entered the Genitourinary Clinic on November 13, 1916, complaining of frequent and smarting urination and shreds in her urine. These symptoms were first noticed in January, 1916 and have been gradually growing worse. There is a family history on the paternal side of tuberculosis, Bright's disease and cancer. The patient has never been strong; as a child she had partussis and typhoid at 14. She has had frequent attacks of tonsillitis with two mastoid operations, 1908 and 1911. Since her marriage she has had gonorrhea, tuberculosis and syphilis, having received treatment for the latter. Menstural history is negative. She has had six pregnancies, four of which were terminated by self-induced abortions. Her present trouble dates back to January, 1916, at which time she noticed frequent and burning micturition and the passage of sheds in her urine. At this time there was no marked pain. These symptoms have gradually increased in severity and on entrance, there was marked tenderness over the bladder, and sharp pain in the region of the right kidney. There has been very little tendency toward bleeding. Physical examination is negative. Cystoscopic examination on November 14, 1916 showed, on the right side of the bladder, a nodular tumor with an area of ulceration in the portion nearest the urethra. On November 21, 1916 the patient was operated and the tumor excised through all the coats of the bladder. On close examination it was found to have infiltrated the right ureter, the diseased portion of which was excised and the ureter transplanted into the bladder. Pathologic diagnosis by Dr. Warthin, is, medullary squamous

celled carcinoma. This patient is still under treatment.

DISCUSSION.

DR. JOHN W. CHURCHMAN: I unfortunately missed the earlier part of this paper, but I would be very glad to say a word about bladder tumors in which I have been interested for some time. I will speak first as regards my experience with fulguration. It has not been as satisfactory as the experience of others, particularly some of the New York men, and I think the particular danger of fulguration is the fact that we don't know, either by macroscopic or microscopic tests, any way to distinguish those tumors which will respond and those which will not. It is not altogether a question of malignancy. Even if one can excise a piece of the tumor through a cystoscope, one cannot say whether it is a variety which will respond to fulguration. Unless, therefore, fulguration of bladder tumors is controlled by a very careful cystoscopy, I think it is one of the most dangerous forms of therapeutics which we have.

As regards excision of bladder tumors, I think there could hardly be a field of surgery where excision would be more satisfactory, if it were not for the problem presented by the ureters. Rarely can a large part of the bladder be excised without injuring the ureters. I have under observation now a case in which a tumor was treated repeatedly with fulguration without effect, the patient being kept under repeated cystoscopic observation. It became necessary to excise certainly over half of the bladder and probably nearly two-thirds, so that we were quite doubtful whether we would be able to get a closure. Closure was made and the patient has from a functional standpoint, a perfectly normal bladder. He is a man of 55 years and passes his water about every three hours and gets up perhaps once a night. With the cystoscope, I think it would be quite impossible to tell that he had ever been operated upon at all. I think we have been unduly cautious in the manner of approach of these bladder tumors in not going through the peritoneum. It is quite a simple thing to do. If the peritoneum is opened at once and packed off just as you do in a pelvic case in the female, you can then dissect the bladder free, and the ureteral problem, attacked from the peritoneal cavity, is much easier than from the front through the bladder itself.

Where the ureter is involved, my own feeling is that either the case is not operable at all, or else a nephrectomy should be done. Of course, one can transplant the ureter in some cases into the rectum, or some part of the bowel, but the results on the whole have been pretty discouraging with transplantations into the bowel and there is no reason why a nephrectomy should not be done.

I think the important thing aside from the distinctly technical problem as to the removal of bladder tumors is that if the surgeon has any chance at all the results in excision of bladder tumors are extraordinarily good, and, secondly, that there is no way of telling positively by either microscopic or macroscopic appearance, which the dangerous tumors, are, so that they should not be fooled with. They belong from a microscopic standpoint in a class by themselves. The appearances of some of the benign tumors border very closely on the malignant type, and many of the malignant tumors look very much like benign tumors, so that one should not draw conclusions from pieces which are dissected out. These tumors should be treated radically with an excellent chance of cure, and if fulguration is practiced, it should be done only under the most careful control with the cystoscope.

DR. REUBEN PETERSON: I would like to ask Dr. Churchman to go into a little more detail about his results in transplantation of the ureters into the rectum, and if he has tried to treat these cases by tying off the ureter with the idea of atrophying the kidney. I was very much surprised at the recent meeting of the Southern Surgical Society to hear Charles Mayo relate the number of cases in which he had done the latter procedure. I read a paper before the Society at the same time, in which I described the technic of forming a cloaca in inoperable cases of vesicovaginal fistula, opening the rectum and then closing the introitus. In the discussion of that paper quite a number of men related their experiences, and some of them advocated the transplantation of the ureters into the rectum. They quoted Coffee and his technic. The results of my experiments made some years ago were that we never could tell in any transplantation of the severed ureter into the bowel what kind of an infection we would get. Some kind of an infection almost invariably resulted. It might be a pyemia or a pyelonephritis which would not destroy the life of the patient but would partially heal. Some of the results reported there were at entire variance with my experience. Dr. Franklin H. Martin about fifteen years ago did quite a number of resections of the entire bladder. He transplanted the ureters into the bowel and those patients who survived the operation almost invariably died of pyelonephritis.

DR. CHURCHMAN: In reply to Dr. Peterson's questions, I have never transplanted the ureter into the rectum because in the first place, it seemed like a very bad surgical procedure, and in the second place, a review of the literature confirms that opinion. There have been a few successful transplantations if followed for a short time. If followed for a long time, a bad kidney infection follows. It seems to me a much better surgical procedure to remove the kidney at the time of the operation I have heard Dr. Mayo make the same statement regarding tying off the ureter. It is well known experimentally that one can ligate a ureter without always having the development of a hydronephrosis. This develops, not when there is complete stoppage, but when there is a partial stoppage. Complete stoppage gives atrophy. If you ligate a ureter, as is occasionally

done accidentally, you almost always get a urinary fistula because at first there is a little distension which through necrosis forces the ligature off, or the catgut dissolves resulting in leakage. So it is more difficult for me to understand why you don't get leakage of urine at first. It is hard to believe that that can be done with impunity. Doubtless one can do it occasionally and get away with it, but it seems to me at any event much safer to remove the kidney on that side because then you have no danger of infection, and these infections back of a ligated ureter are not always simple, but sometimes lead to pyemia and death. So if you have an infection, why not take the kidney out?

DR. ROLLAND W. KRAFT: The experience in the genitourinary clinic agrees with that of Dr. Churchman regarding the regeneration of the bladder. When the first patient left the Hospital, the line of incision had disappeared except for two dimples and one of these was very near the ureteral opening.

On December 21, 1916, Mrs. H. was cystoscoped by myself and the bladder was found in excellent condition. The line of suture was well healed, slightly dimpled in two or three places. The end of the incision came within one-half inch of the ureteral opining. Examination of the urine was negative and the general condition of the patient was splendid.

In regard to the differential diagnosis, we must consider all genitourinary conditions starting with hematuria, as the one principal symptom and often an only symptom in cases of bladder tumor is blood in the urine. Among such conditions are hemophilia, which can usually be readily ruled out. Renal hematuria due to parasites, injury, movable kidney, hydronephrosis, tuberculosis, syphilis, tabes, stone, tumor or hemorrhagic nephritis must always be thought of. All are easily ruled out by the accompanying symptoms and absolutely by the cystoscope. The ureter may give rise to bleeding because of a small polyp, a stone, a varicose vein or some trauma. This leaves the posterior urethra and prostrate to be eliminated. Primary bleeding from the prostate without any other symptom is very rare. Among the causes of bleeding from the bladder, primarily we have stone, tuberculosis, syphilis and varicies. With the present technic of cystoscopy there is no excuse for mistaking any of these conditions. Both of these cases gave positive findings upon rectal and bimanual examination. Removal of a piece of tissue is not considered by some authorities as warranted. It was, however, done in both of these cases through the cystoscope by means of a snare and a positive diagnosis as to type of tumor established before the operation was undertaken.

HISTORY OF TRANSFUSION OF BLOOD —REPORT OF ONE HUNDRED AND FIFTY TRANSFUSIONS.

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The blood has been regarded as synonymous with life from the very earliest time. Many references are made to transfusion of blood in the writings of the ancient Egyptians. It was condemned in the works of Pliny and Celsus. Libavius in 1615 report in "Defensione Syntagmatis Arcanorum Chymicorum" as follows: "There is present a robust healthy youth full of lively blood. There is also present one exhausted in strength, weak, enervated, scarcely breathing. Let the operator have silver tubes passing between them; let him open an artery of the healthy one; insert the tube and secure it. Next let him find the artery of the patient and adjust the receiving tube. Now let him adapt the two tubes to each other and the arterial blood of the healthy one, warm and lively, dances in the vessels of the sick one; and immediately it produces the appearance of life and removes all languor."

It is recorded that the first transfusion of blood in man was performed by Jean Baptiste Denys of Montpellier, physician to Louis XIV, in June, 1667. The case was that of a young man dying from repeated venesection. and into his veins Denys injected the blood of a calf or a lamb. Following the operation the patient apparently recovered his health. The procedure was criticised very severely with the result that it was decreed, "For the future, no transfusion should be made on the human body, but by the approbation of the physicians of the Faculty of Paris."

There is an account, however, of transfusion in the case of Pope Innocent VIII, one hundred and seventy-five years earlier than this, to be found in Villari's life of Savonarola, describing three attempts made in transfusion of blood from three youths to the veins of the aged Pontiff, but with no improvement in his condition and resulting in the death of the boys. The "Life and Times of Rodrigo Borgia" gives another version refuting the above: "Three boys were bled until they died and the Pope drank a draught prepared from this blood, without benefit."

It seems probable that transfusions of blood were attempted before the time of Harvey's

discovery of the circulation of the blood in the seventeenth century.

The following is found in the diary of Samuel Pepys, describing the meeting at Gresham College: "November 14, 1666, Dr. Croone told me, that, at the meeting at Gresham College tonight, which it seems, they now have every Wednesday again, there was a pretty experiment of the blood on one dog, let out, till he died, into the body of another on one side, while all his own ran out on the other side. The first died upon the place. The other very well, and likely to do very well. This did give occasion to many pretty wishes, as of the blood of a Quaker to be let into an Archbishop, and such like; but, as Dr. Croone says, may, if it takes, be of mighty use to man's health, for the amending of bad blood by borrowing from a better body."

In a footnote is given the following: "At the meeting on November 14th, the experiment of transfusing blood of one dog into another was made before the Society by Mr. King and Mr. Thomas Coxe upon a little mastiff and a spaniel with very good success, the former bleeding to death, and the latter receiving the blood of the other, and emitting so much of his own as to make him capable of receiving that of the other." On November 21st, the spaniel "was produced and found very well." The experiment of transfusions of blood which occupied much of the attention of the Royal Society in its early days was revived within the last few years.

"November 16: This noon I met with Mr. Hooke, and he tells me the dog which was filled with another dog's blood, at the College the other day, is very well, and like to be so as ever, and doubts not its being found of great use to men; and so to Dr. Whistler, who dined with us at the tavern."

Several transfusions are reported by Denys in which from 5 to 10 ounces of the arterial blood of a lamb were usually taken. The first, a case showing condition of depletion from venesection, resulted in complete cure; the second, purely experimental, a perfectly healthy man agreeing to the trial: ten ounces of blood were removed from his vein and a similar amount from a lamb, injected into him. No disagreeable results were noted, and the man experienced an agreeable sensation of warmth. The third case was that of an insane man, 34 years old, escaped from a place of confinement, who was captured and transfused with five or six ounces of blood from a calf. A larger quantity was used a second time. Disapprobation of the Faculty of Paris discouraged further transfusions until early in the nineteenth century in France.

Lower, about the same time that Denys was working in France, was experimenting along the same line in England. His discoveries are reported in 1683, although as early as 1666 he had transfused the blood of three calves into three dogs. One of the dogs whose blood was withdrawn until he was extremely weak, recovered his strength instantly upon being supplied with blood from a calf.

Lower describes his method in detail as follows: "First take up the carotidal artery of the dog or other animal, whose blood is to be transfused into another of the same or different kind, and separate it from the nerve of the 8th pair, and lay it bare above an inch. Then make a strong ligature on the upper part of the artery not to be united again: But an inch below, viz. towards the heart, make another ligature of a running knot, which may be loosened or fastened as there shall be occasion. Having made these two knots, draw two threads under the artery between the two ligatures; and then open the artery, and put in a quill, and tie the artery upon the quill very fast by those two threads, and stop the quill with a stick. After this, make bare the jugular vein, in the other dog, about an inch and a half long: and at each end make a ligature with a running knot, and in the space between the two running knots draw under the vein two threads as in the other: Then make an incision in the vein, and put into it two quills, one into the descendent part of the vein, to receive the blood from the other dog, and carry it to the heart: and the other quill put into the other part of the jugular vein (which comes from the head) out of which, the second dog's own blood must run in the dishes. These two quills being put in and tied fast, stop them with a stick, till there be occasion to open them. All things being thus prepared, fasten the dogs on their sides towards one another so conveniently, that the quills may go into each other. After that unstop the quill that goes down into the first dog's jugular vein, and the other quill coming out of the other dog's artery; and by the help of two or three other quills, put into each other, according as there shall be occasion, insert them into one another. Then slip the running knots, and immediately the blood runs through the quills, as through an artery, very impetuously. And immediately, as the blood runs into the dog, unstop the other quills, coming out of the upper part of his jugular vein (a ligature being first made about his neck, or

else his other jugular vein being compressed by one's finger) and let his own blood run at the same time into dishes (not constantly, but according as you perceive him able to bear it) till the other dog begins to cry, and faint, and fall into convulsions, and at last die by his side. Then take out both quills out of the dog's jugular vein, and tie the running knot fast, and cut the vein asunder (which you may do without any harm to the dog, one jugular vein being sufficient to convey all the blood from the head and upper parts, by reason of a large anastomosis, whereby both the jugular veins meet the larynx). This done, sew up the skin, and dismiss him, and the dog will leap from the table, and shake himself, and run away as if nothing ailed him.

"Or, instead of a quill, take a small crooked pipe of silver or brass, so slender that one end may enter into a quill; and having at the other end, that is to enter into the vein and artery, a small knob, and for the better fastening them to it with a thread; for this is much more easy to be managed than a quill."

There is much interesting material in Dr. Lower's article. He reports, in one instance, the cure of a mangy dog in ten days after transfusions with blood from a healthy dog; in another, the transfusion of a dog for acute anemia following splenectomy with hemorrhage. Many transfusions were done from one species to another. He reports the transfusion of blood into human veins by Dr. Arthur Coga, November 23, 1667, when 7 ounces were withdrawn from the man, then by means of the Lower "pipe" joining was made to the artery of a sheep; transfusion continued for two minutes during which time about 9 or 10 ounces were transfused into the patient's veins. His condition was good during the operation and he afterward "found himself very well." He reports, also, experiments with noncoagulates, such as spirits of sal ammoniac. Dr. Lower died in 1691 and his experiments have been repeated by Sir Edmund King, Thomas Coxe, Gayant and Denys.

Previous to the France-Prussian war there was a long interval during which transfusion received almost no attention, having seemingly fallen into disrepute. At the time of this war, and afterward, transfusion was again attempted but finally given up. Between 1850 and 1875, however, many transfusion experiments were being carried on in the laboratory of Greifswald. In Hamburg Leisrink was working, also, with transfusion. The work in Greifswald was performed by Eulenburg and Landois. The latter devised an apparatus for direct transfusion by means of cannulas and tubing. In 1875 he published a monograph on "Die Transfusion des Blutes."

Dr. William Halsted gives us the first article in this country along this line. He reports several cases of carbon-monoxide poisoning treated by transfusion or refusion of blood. "Refusion of blood is literally a depletory transfusion in which the blood withdrawn is returned to the circulation of the loser." Dr. Halsted would first draw the blood, defibrinate it, and then reinject it into the patient. As to the best methods of infusing into the circulation good authorities disagree. There are four possible methods of infusion: centrifugally or centripetally into an artery or vein. Although to von Graefe is given the honor of being the first to draw attention to centrifugal arterial transfusion, Hueter deserves the credit of having introduced it to the profession and strongly advocated the method. His arguments for peripheral or centrifugal arterial transfusion are that the blood courses slower and more uniformly to the heart and the danger of phlebitis is avoided. Landois adds to these advantages, maintaining that the capillary system, like a supplementary filter, catches all foreign articles which may be present. Kümmel, Schede's assistant, produced gangrene of the hand by the centrifugal infusion of a saline solution into the radial artery.

The above arguments hold good for centripetal as well as centrifugal arterial transfusion. Dr. Halsted advocated the centripetal arterial infusion.

The syringe method of transfusion which we have been using for the past year was perfected by Lindeman. This method was first reported in 1892 by Prof. H. von Ziemssen, Director of the Medical Clinic in Munich, who at first injected whole blood subcutaneously, using from 300 to 450 cc. of blood at an injection, resulting in a very painful procedure. He used vigorous massage for fifteen minutes. Hemoglobin would be increased from 10 to 15 per cent. but he reports no fever and no hemoglobinuria in these cases. He then devised the syringe method. Following intravenous infusion he occasionally had rise of temperature and chill but in no case hemoglobinuria. No evidence of hemolysis or free hemoglobin ever were found in the blood serum; nor did he have phlebitis, or secondary thrombosis. He first raised the question of whether the often repeated transfusion in the bad progressive anemias might have a use, and suggests the possibility that, by repeated transfusions a real cure might result in some of these cases. He reports the case of a patient, a

woman, thirty-eight years old, whom he transfused seven times with marked benefit each time and raise of hemoglobin. As a result of experiments, he concluded that salt infusion was of benefit only for a short time.

The next great steps in this country were made chiefly in the simplification of the technic and making more sure of success in transferring a sufficient quantity of blood from the donor to the recipient. Carrel in his work (also Crile with his cannula) brought forth new interest along the line of direct successful end to end suture of blood vessels. Previous to this time, excepting in the work of Ziemssen, there was no certainty that the blood would enter the veins of the recipient. During recent years multitudes of cannulas and methods of suture have been devised which have eliminated the danger of clotting and subsequent embolism.

BRIEF REPORT OF SUTURES AND CANNULAS.

The success of Carrel depended upon the most rigid aseptic technic, the prevention of blood clotting in the wound or in the severed blood vessels during the operation by means of careful hemostasis and saline irrigation. His manual dexterity, fine needles and suture materials and exact approximation of intima and media were also important factors. Then came the Crile cannula with the principle of everting one vessel over a hollow cylinder and inserting this in the recipient vessel. In this method the intima coats are brought together and there are no raw surfaces. Following this there came a number of imitations with improvements, the best of these being the Elsberg cannula. Sauerbruch and Hartwell devised a method of slipping the ends of the artery directly into the end of the vein. This was fairly successful. Levin, Janeway, Soresi and McGrath have methods more or less similar, the vessels being everted over hollow cylinder, then brought together directly end on, by sliding the two parts on a little track or by the closing of a clamp.

In all these methods, however, there is considerable inconvenience to both donor and recipient. The amount of blood cannot be determined absolutely excepting, perhaps, by methods suggested by Libman and Ottenberg. Oftentimes the artery would go into a spasm from which it would not recover for half an hour or more, allowing a very small quantity of blood to pass through. This sometimes would be overcome by irrigations of hot salt solution.

Then come the indirect methods: the blood, while being transferred came into contact with the walls of the cannula, with a receptacle, with a needle or with the syringe. Dr. Lower performed the first in 1666; Denys the first from man to man, in France, by means of quills described elsewhere in this paper. About 1860, Landois used the rubber tubes. These methods were probably unsatisfactory. In 1909, Brewer and Leggett used simple glass tubes coated with paraffin extending from vessel of donor to vessel of recipient. This was a very good and efficient method. Pope modified it somewhat with a rubber tube between two glass cannulas. Bernheim used the silver cannula: one half fitting in the artery of the donor; the other in the vein of the recipient—one cannula then fits into the other, completing the connection.

BLOOD WITHDRAWN AND RE-INJECTED.

For the prevention of clotting, most methods depend on paraffin-coated receptacles, as of Curtis and David, 1911. Kimpton and Brown, Satterlee and Hooper and Percy, developed methods for measuring the blood and then re-injecting it. At first these were all without the addition of any foreign element. The best of these methods is apparently that devised by Kimpton and Brown as the blood can be withdrawn in one room and taken into another for injection into a recipient.

The syringe method marks the greatest advance that has been made in solving the technical difficulties of transfusion. It is so easy and so simple, without any inconvenience to either donor or recipient, that it is almost ideal. It is yet to be determined whether ultimately only one syringe or a number of them will be used. Ziemssen used a number of needles which were placed directly in the veins of the recipient and donor and he found that the needle could be stuck again into the vein at the same place. He advised at least three 25 cc. syringes and two or three assistants. The syringe was filled with blood withdrawn from donor and injected directly into the recipient. While this injection was being made, the second syringe was being filled. When the first syringe was emptied of its blood it was immediately washed out in normal salt solution by an assistant so that a continuous transfusion was going on. His average transfusion was from 200 to 300 cc.

Lindeman reported his elaboration of this method in 1913 before the New York Academy of Medicine, describing improved needles and the use of more syringes. Lindeman's revival was apparently a great advance.

Among recent devices reported in which but one syringe is used, may be noted the method of Watt, not reported, in Dr. Halsted's Clinic,

and of Kush, Bernheim, Cooley and Vaughan, and then later of Unger in New York. With the Unger apparatus, which is probably the best, a continuous injection of salt solution is made through the apparatus so that the blood does not have time to clot in it, while the syringe is kept cool by means of ether spray which also retards clotting. There is very little danger of any infection being carried from recipient to donor.

HERUDIN AND SODIUM CITRATE, PLASMAPHAERESIS METHODS.

At the same time work was being carried on to find a mechanical way of preventing clotting during transfusion, experiments were being performed on a chemical basis, for if the clotting could be prevented by a chemical, the difficulty of transfusion would immediately be solved. The two chemicals most used have been herudin and sodium citrate. The plasmaphaeresis method is the result of extensive work carried on by Dr. Abel of Baltimore and I have tried it in one patient with uremia. Blood was withdrawn from the patient into receptacles containing herudin. These receptacles were taken some distance to the laboratory. The red corpuscles were separated from the plasma then brought back to the operating room and re-injected into the patient in normal salt solution.

The herudin and sodium citrate methods are very successful and have the advantage that blood may be kept for some time, even four or five days, on ice and then be injected into the recipient. Satterlee and Hooper in New York, during 1914, reported favorably on the herudin method, while the sodium citrate method was reported by three workers almost simultaneously, early in 1915, the first being by Hustin, from Brussels, then in this country by Weil and then Lewisohn.

The objection first made was that the use of any drug to delay coagulation time would contraindicate the transfusion, as in a great many cases where transfusion is indicated, there is already bleeding with increased coagulation time. With exalate and citrate solutions the calcium of the blood is fixed and the calcium is a necessary factor in spontaneous coagulation. Continued use of the method, however, apparently has shown that the coagulation time of the recipient is not lengthened but is actually shortened. This is hard to explain.

Defibrinated Blood.—Undoubtedly the injection of defibrinated blood has saved lives and done a great deal of good. The reaction, however, with chill and high fever after its injection, as occurs in so many cases, would indicate that the method should be abolished, giving way to the very successful syringe and citrate methods.

The work of Dr. Halsted in 1882 and the work of Dr. Moss with defibrinated blood should not be forgotten. Dr. Halsted concluded from his work with the cases of gas poisoning that the depletion and not the refusion was the most beneficial.

HEMOLYSIS.

Without doubt transfusion would now have a far different standing in the world had there been only the mechanical difficulties of transfusion to be overcome. Discredit must repeatedly have been thrown on the procedure by the accidents due to hemolysis often accompanied by death. It was Landois who first showed that the serum of one animal may have the property of destroying the red blood cells in another. Hayem reported that in a transfusion from an ox to a dog, a serious condition resulted, resembling purpura hemorrhagica,death occurring in a few hours. He says "The effect of a foreign cell on the circulating blood is such that the latter immediately becomes finely clotted and carries the thousands of clots into the small vessels and one sees innumerable infarcts formed." We will not discuss in this paper the development of knowledge in this line nor the serological tests which have become so essential.

These laboratory tests fell into great disfavor about eight or nine years ago by men doing transfusion. It was the common saying that hemolysis or agglutination might occur *in vitro* but not *in vivo* and vice versa. I, too, assumed this attitude and while in New York good fortune was on my side and I had no serious accidents. Later, however, the great importance of these tests was fully apprehended and I will never again consent to do a transfusion except under the most extreme urgency without the reports on laboratory tests. I firmly believe now that such tests should be negative at the end of one hour, or if possible, a longer observation—never less. The earlier tests probably were not allowed to run long enough. Careful and accurate examinations eliminate all possibility of infection with any transmissible disease by transfusion.

Transfusion has been tried in the following types of cases: pernicious anemia, illuminating gas poisoning, exophthalmic goitre, hemaphilia, toxemia, shock, hemorrhage, leukemia, septicemia, purpura hemorrhagica, malnutrition, endocarditis, intoxication, general debility, dysen-

tery, typhoid fever, infectious diseases, melena neanatorum, scarlet fever, pellagra, tuberculosis and tumors. It has also been used for vaccinating purposes. The best results have been obtained in the cases of hemophiliacs and babies with melena neanatorum; in the latter it is a specific and in the former it stops the bleeding immediately, although without curing the disease. It is beneficial in all anemias and may be still more beneficial in primary anemias with proper regulation. In shock it has been disappointing; this may be due to the fact that the condition has progressed too far before the transfusion is done. I would advise a very early transfusion in cases of shock. Transfusion is of the greatest benefit following acute and prolonged hemorrhages. For gas poisoning, bleeding is of great benefit as pointed out by Halsted. Depletion followed by injections of saline solution is as good, if not better, than transfusion. In tuberculosis there has been slight benefit and, so far, nothing has been accomplished in malignant diseases in the human by transfusion.

There is a great field still undeveloped along the line of vaccinating transfusion. My experiences in typhoid fever have been very successful. In cases of very ill typhoid patients, it would be most desirable to have a series of donors who recently have had typhoid fever. Very marked improvement followed transfusion with blood from a patient who previously had had typhoid fever, in the case of a patient depleted by hemorrhages as well as having a high grade toxemia; his temperature dropped to normal and the hemorrhage ceased, with a temporary disappearance of the toxemia.

The above is very suggestive of the good that might be accomplished by transfusing typhoid fever patients with blood from patients who have recently had the disease and who have probably high grade immunity. It would be extremely interesting to try this type of transfusion in patients with other diseases and perhaps be very beneficial to the patient.

NOTE: A fairly complete list of bibliographies, explanatory notes, etc. may be found in the paper "Transfusion of Blood: History, Methods, Dangers, Preliminary Tests, Present Status. Report of One Hundred and Fifty Transfusions" in the Johns Hopkins Bulletin, March, 1917 by R. D. McClure and George Robert Dunn.

REPORT OF TRANSFUSIONS.

We have done 150 transfusions for 80 patients, as shown in the following table:

Group of cases	Cases	Transfusions
1. Pernicious Anemia[1]	17	64
2. Secondary Anemia	19	23
3. Hemophilia	2	5
4. Shock	2	2
5. Hemorrhage	6	6
6. Leukemia	5	6
7. Intoxications	7	9
8. Septicemia	3	11
9. Dysentery	1	1
10. Typhoid Fever	4	6
11. Other Infections	5	5
12. Purpura Hemorrhagica	1	1
13. Benzol Poisoning	3	8
14. Tumors (Carcinoma)	5	5
	80	152
Not Successful (Early Days, Direct Method)	2	2
Cases	78	Transfus 150

The transfusions which we were doing were, of course, more or less experimental. The field where transfusions are indicated is not definite as yet. We did 75 in pernicious anemia. In eight of these cases we did a splenectomy along with the transfusion. Some of those patients are living now, three years or more. What started us along this line was that we had some patients with benzol poisoning whom we transfused and they died. One patient's family insisted that we keep on transfusing. We were doing then blood vessel anastamosis transfusion. We did perhaps six transfusions on this one girl. At one time she was in coma. She recovered completely. In pernicious anemia you probably all have seen the marked benefit immediately after transfusion. And then after a time you will see that the patient gradually goes down hill again. If you transfuse repeatedly you can get the patient's hemoglobin up to 80 or 90 per cent. Then it is perfectly safe to take out the spleen. Then if you keep on with the transfusions you will notice a marked benefit. I feel that if you could take a pernicious anemia patient and get enough donors to keep the patient's blood over 80 per cent. after a few years one could cure pernicious anemia. I just had a letter from a man where the onset of the disease was three years ago. After three years he has had no remissions. He had about fifteen transfusions with several gallons of blood all told.

Another interesting field is the transfusion of people with acute diseases, typhoid fever patients, with blood of patients who have had the disease recently. Two years ago we had a medical student who was having very severe hemorrhages. We transfused him with the blood of a patient who had had typhoid fever six years before. His temperature immediately dropped

1. McClure, Roy D., M.D. Pernicious Anemia Treated by Splenectomy and Systematic Often-Repeated Transfusion of Blood. Transfusion in Benzol Poisoning. J. Am. M. Ass., Sept. 9, 1916.

and the hemorrhage stopped for three days. We did another transfusion and then his temperature went down and stayed normal. So it seems to me that there are great fields for transfusion, especially in this line.

DISCUSSION.

DR. JOHN W. CHURCHMAN:[2] I would like in this connection to mention a case which I think is absolutely unique in medical literature, showing what is a well-known danger of transfusion, and also showing the clinical proof of experimental work done some years ago in Europe. This patient was a pernicious anemia case brought to one of the largest university clinics in the east and transfused several times with great improvement. He was so much improved that he was to be sent home. Previous to the transfusion of blood in each instance, the blood had been tested out in the usual way for hemolysins and also the Wassermann reaction had been done. The final transfusion was done from his son, the blood being tested out for hemolysins but no Wassermann was done. The danger of the transmission of syphilis was explained to the son and he said that he had never had the disease. The patient improved after the transfusion and went home. About six weeks later he wrote to the hospital that he had had a peculiar rash and wanted to come up to see about. He was sent for and came up with a perfectly typical secondary syphilide. The son was then sent for and confessed that at the time the transfusion was done he had a primary luetic infection. So that you have here certainly the only human case of demonstrable transmission by the blood of lues, which, of course, comfirms the experimental work of Neisser on monkeys and illustrates, of course, that no chance should be taken in this respect. The rather amusing sequel of this story is that the son is now threatening to sue the Hospital for having given his father lues.

DR. NELLIS B. FOSTER: I am very much interested in Dr. McClure's paper and I am sure we are much indebted to him for coming here and giving it to us. Some of the early instances of transfusion were known to me. The one in Pepys's diary I remember of calling to the attention of an investigator in New York City and he hasn't spoken to me since. In a few pages later Pepys says that the dog is doing well. I was also interested that he brought up the early work of Dr. Halsted at the New York Hospital, the gas cases.

Then on the practical side I was particularly interested in what Dr. McClure has to say in regard to pernicious anemia because I think that we are, in clinical medicine, feeling more and more that that is about the only means which we have for the immediate treatment of such cases. They are in a certain sense, emergency cases and something must be done rather promptly if we expect to tide the patient over a critical period. In New York transfusion is coming more and more in vogue. We all felt a great deal of reserve about drawing deductions as to the ultimate utility of the method, but there was not much question as to the immediate utility. Here we are beginning to transfuse these cases. We have a peculiar problem in the way of finding donors and we have a little campaign going on now to try to get a number of healthy men in the town and get them grouped according to their tests and have them available to the clinic upon call; and, of course, in a small town like this, that is quite a problem. In the cases which I have seen transfused, only a very few have had the spleen removed, and I would like to ask Dr. McClure if in his experience he thinks that is a necessary part of the procedure in order to get the favorable results which he has noticed. Many cases in my experience have had a favorable outcome with splenectomy. Perhaps there was a favorable result in spite of the fact that the spleen in the majority of the cases was not removed. There was a feeling in the New York Hospital rather antagonistic to splenectomy in pernicious anemia. They did wholesale splenectomy in other cases.

DR. CYRENUS G. DARLING: In reference to transfusion in pernicious anemia, we had two cases in our clinic last year where transfusion was done and the spleen removed. Both of these cases left the Hospital apparently well. Of course, it is too short a time to say that they will remain well. In fact, they were turned over to the medical clinic for further observation and I suppose Dr. Foster has them under observation and will report the results later.

DR. CARL D. CAMP: I would like to ask a question as to what is the particular advantage of transfusion of blood over the injection of normal saline solution. I have seen, in cases of Asiatic cholera in Russia, a very marked benefit occur from intravenous injection of large quantities of normal saline, and I have heard, though I have never seen it, that the same beneficial effect was obtained in some cases of typhoid fever. The doctor's statement that possibly his blood transfusions acted by elimination of a toxin, would suggest that possibly a normal saline would do as well.

DR. MCCLURE: I will take the last question first. A good many of the cases were transfused in our series for hemorrhage, either hemophiliacs or bleeding in leukemia, or in benzol poisoning, and sometimes the hemoglobin was 14 or 15 per cent. The blood is so very thin and watery in such cases that I feel that the transfusion of the saline probably would not stop the hemorrhage. It is true that in those cases of great anemia the symptoms do not seem to be due to the lack of oxygen-carrying power as there is no cyanosis, but it seems that by transfusion you are replacing that which is missing, and if you can do that with blood, we feel that it is better than saline infusion.

As to splenectomy connected with transfusion in pernicious anemia, we have had eight cases. Some of those patients are dead. Those patients were not transfused systematically from the beginning. The patients which we have kept alive are the ones which we have followed carefully, and as soon as they showed any symptoms of a relapse, we had them come back to the hospital and we gave them systematic transfusion.

2. I am much interested in the remarks of Dr. Churchman, I believed that I had reported the first case of syphilis transmitted by transfusion of blood at the 1916 meeting of the American Medical Association. (See **Pernicious Anemia Treated by Splenectomy and Systematic, Often-Repeated Transfusions of Blood. Transfusion in Benzol Poisoning, by Roy D. McClure, M.D., Jour. Am. Med. Ass., Sept. 9, 1916, Vol. LXVII, pp. 793-796**). The circumstances in the case reported by me were very similar to those mentioned by Dr. Churchman.

RADIOGRAPHIC FINDINGS OF THE MONTH.

JAMES G. VAN ZWALUWENBURG, M.D.
(From the X-ray Clinic, University Hospital, Ann Arbor, Michigan.)

Case showing closing over the canal which carries the suboccipital nerve and the vertebral artery.

Case of osseous overgrowth on the back of the head. Two plates. Periosteal sarcomata.

Case of malignant psammoma of the frontal bone following trauma.

Case of brain tumor.

Case of correction of fracture of the neck of femur by driving in one nail. Bony ankylosis between the head of the femur and acetabulum, and motion about the nail as an axis.

Case of absence of spinous processes from the fourth lumbar to second sacral. Spina bifida.

Case of localized spondylitis, one side of the intervertebral disc with the formation of osteophytes on the lips. Typhoid spine.

Case of impacted fracture of the head of the humerus, treated for "rheumatism." Traumatic.

Case of old hypertrophic arthritis suing for damages. Not traumatic.

Case of "rheumatism" of the foot. Atrophic arthritis.

Case of abscess cavities in the mastoid processes.

Two cases of foreign bodies in the knee joint.

Case of inoperable carcinoma of the stomach without symptoms.

Case of perforating ulcer on the lesser curvature of the stomach.

Case of hepatic flexure, snared off by adhesions simulating diverticulum.

Case of man with four attacks of renal colic. Loss of weight. Very few gastric symptoms. Stomach shows persistent defect in the greater curvature. Possibly an extragastric mass beginning to infiltrate the stomach, possibly hypernephroma. (On exploration, carcinoma of left lobe of liver).

Case of enormous dilatation of the heart.

Case of aneurism.

Case of nursing mother with clinical tuberculosis of the breast. Clinical examination of the thorax negative. Undoubted tuberculous process radiographically.

Case of hard tumor of the neck showing two large masses within the thorax. Probably metastatic malignancy, either sarcoma, carcinoma of the kidney or thyroid. Man has kidney symptoms. Probably hypernephroma with metastases.

Three plates showing hyperemia in the lung. *(See notes.)

Case of unerupted canine tooth.

*These three plates are of exceptional interest in demonstrating the importance of the vascular component of the bronchovascular tree. The first plate was taken immediately after the first symptoms (pleural pain) arose, and demonstrated very clearly stereoscopically an exaggeration of the "bronchial tree" over a wedge shaped area, with the base at the pleural margin and the apex at the hilus in the mid thorax. The remainder of the "bronchial tree" appeared everywhere normal. In our notes on the case, it was assumed that these shadows were due to active dilatation of the pulmonary vessels, and in the absence of distinct indications of pleural disease, it was assumed that they were the first signs of a pneumonia. It seemed improbable that so distinct an alteration should result from anything but rather extensive parenchymatous infection.

The second plate was made about a week later and now demonstrated the presence of moderate sized effusion in the pleura, naturally in the lower portion but the region under suspicion was more or less obscured by the secondary processes, effusion and the compression.

The third plate after the recovery of the patient shows the entire disappearance of all evidence of effusion and of all evidence of vascular dilatation. To our mind this confirms the conclusions we have already previously reached with respect to the importance of blood volume in the shadow which is cast by the lung, and we believe that more careful attention to this phenomenon will sometime lead to the possibility of differentiation between increases in the bronchial tree due to peribronchial thickening or infiltration and vascular conditions, and even to the differentiation of the type of vascular reaction in a given area.

This problem has a distinct bearing on the diagnosis of early tuberculosis in which it not infrequently happens that the only demonstrable change is an increase in the development of the bronchovascular tree in either one or the other of the apices. It has usually been held that this is due to a tuberculous infiltration of the perivascular lymphatic structures of the lung tissue. It is difficult to harmonize this conception of the pathology with the observation that these shadows not infrequently clear up with the improvement of the patient. We think it much more likely that they represent the vascular reaction to the infection in the territory supplied by these vessels.

The Journal
OF THE
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ISSUED MONTHLY UNDER THE DIRECTION OF THE COUNCIL

EDITOR
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Grand Rapids, Mich.

All communications relative to exchanges, books for review, manuscripts, news, advertising, and subscription are to be addressed to Frederick C. Warnshuis, M.D., Powers Theatre Building, Grand Rapids, Mich.

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April.

Editorials

SPECIFICS—ONE SWALLOW DOES NOT DENOTE SUMMER.

The following two contributions to the *American Journal of Clinical Medicine* from a Detroit physician represent a deplorable scientific viewpoint.

INCIPIENT CANCER OF THE BREAST.

Yesterday I was called to see a married woman, 37 years of age, and found her suffering great pain in the left breast. There was no enlargment or swelling, but she told me that great waves of pain passed through the gland and that these weakened and sickened her. It seemed, she said, as if a great hand with fingers like needles were grasping and pressing the breast. There was no evidence of chills or rise of temperature. She told me of several miscarriages and two curettments, and of having lost flesh and strength lately. This, coupled with reverses in finances, has caused great mental depression.

The only objective symptom noticeable was the very striking appearance of the tip, or apex, of the nipple—that is, the area surrounding the milk-ducts—the latter appearing like the center of a flower, of the pinkest red that I ever saw. The other breast was normal.

The patient is a trained nurse from New York City, has nursed in Missouri (St. Louis), in Michigan, and in other states. She expected, of course, that I should give an injection of morphine, for the paroxysms of pain were simply unbearable.

Seeing that this was the first manifestation of a cancer of the breast, I put her on the following treatment: One granule of glonoin (1-250 grain), to be crushed between the front teeth and allowed to be absorbed from the mouth. Immediately after and taken in the same way, two granules of hyoscyamine of 1-250 grain each. This, by the way, is proper treatment in any case of sickness, as it dilates the capillaries and prevents concentration of blood at any one point. Immediately after that, and at 5-minute intervals, 1-10 grain calomel tablets were given, allowed to disintegrate, and not washed down with water. Then she had to take, at once, one tablespoonful of epsom salt in a teacupful of hot water, followed by a glass of cold water.

Calomel and a laxative saline or the abundant liquid flush-out of the bowel, which is nature's drainage river.

Now for the specific treatment—the preceding was but preparatory. I put five drops of mother tincture of pulsatilla into half a glassful of water. This for the cancerous condition itself. In another glass, half full of water, I put five drops of tincture of nux vomica. This for its tonic action. (You may smile over the smallness of these doses!) Then the patient was instructed to take one teaspoonful of each mixture, alternately, every half hour.

Result: In sixteen hours, all pain is gone, the nipple is normal in color, the patient is feeling fine.

Had there been enlarged glands or hardness of the breast or axillary glands, I should have added phytolacca to the foregoing. In the incipiency of cancer you will find that pulsatilla will disperse the gathering storm.

These things are worth looking into.

Test them—test them—and let the results tell their own story!

Do not forget, though, that the patient must be watched and safeguarded while the cancer-medicine is being given.

QUICK RELIEVE FROM GALLSTONES.

Just now there came into my office a school teacher, lady of perhaps 28 years, who was suffering from an attack of gallstone-colic. The pain was almost unbearable; she could neither sit nor lie down, but continued walking about and moaning. She was taken suddenly on the street, had vomited frequently, and, being a stranger here, had called upon the first physician she could find. She explained that she had been operated upon for gallstones six years ago, when two very large and some small ones were removed, and that she had not had an attack in several years.

She fully expected that I would have to give her chloroform or an injection of morphine; in which, however, she was mistaken. Instead, I caused her to chew between the front teeth one granule of nitroglycerin (glonoin) of 1-250 grain, and immediately afterward two granules of hyoscyamine of 1-250 grain each. In five minutes, I repeated this dosage. Also, I dissolved in a teacupful of very hot water 10 grains of magnesium phosphate 3x and gave her of this one teaspoonful every five minutes. In less than half an hour, the woman was free from pain and went happily on her way.

Score another victory for the granules!

Sixteen hours accomplishing the relief of all clinical symptoms of a pre-cancerous breast, by the use of nitroglycerine, hyoscyamine, calomel, salts, pulsatilla, tr. nucis vomica!! (Sic). Either it wasn't cancer or if cancer the result reported at best was but transitory. This dilly-dallying with medical treatment is what maintains the high death rate from the disease. When will professional men cease to be deluded and terminate their effort to render medical treatment for a condition in which early and prompt surgical intervention is the sole source of safety?

Nitroglycerine, hyoscyamine, magnesium phosphate 3x relief par excellence for gallstone colic!! The stone passed out of the duct and relief followed but was not solely accomplished by the medicines administered. Everyone has seen these attacks pass off in ten minutes to a half hour without medication. Why then burst forth into print proclaiming a specific method of treatment. We see no particular victory, but rather cause for regret.

We wonder that the editor endorsed, by pub-

lishing, these comments. To publish them would not have been amiss had the opportunity been grasped to enlighten the author and readers who may be led astray by such unreliable, unfounded statements. If the doctor can submit a group of 100 to 500 cases of precancerous or early cancer of the breast to whom the treatment was administered and five years elapsing without symptoms, then might he be justified in making a claim for effective, specific treatment. One case means nothing and we deplore the abetment of such allegations.

Speed the day when we shall be relieved and freed of these delusions influencing the minds of men who, if they will but employ the time to do so, might familiarize themselves with scientific facts and truths.

Too many similar reports are finding their way into medical publications. We believe that a permanent blockade is demanded.

FIFTY-SECOND ANNUAL MEETING—BATTLE CREEK, SEPT. 4, 5, 6.

The Scientific Committee met in Battle Creek, March 6, to outline and perfect the program for our Fifty-Second Annual Meeting to be held September 4, 5 and 6. The entire committee was present and in addition President Biddle and the State Secretary. The place for holding the several sessions, the Masonic Temple, was visited and section rooms allotted. The facilities afforded in this building make it possible to hold all sessions under one roof. The rooms are commodious, airy and excellently adaptable to our use with splendid lantern facilities. The main auditorium will seat 800 people.

Several hours were spent in discussing section program features. While it is not deemed expedient to impart advance information at this time we can give the assurance that the plans and features determined upon by the Committee warrant our stating that never in our history has there been such an attractive, instructive and profitable program as this one that is now being rounded to completion. It is going to forcibly command the attention and interest of our members. It is going to be one that no member can afford to miss. The custom of previous years has been altered and the innovation to be presented cannot help but awaken new interest and receive approval. More of that and the details in a later issue.

The local committee is planning equally attractive and delightful entertainment features. To a man they are bending every effort and will afford those in attendance a taste of true hospitality.

It is up to you, member, to talk, plan, think about this meeting. You simply have got to be there because you cannot afford to miss this meeting. It should be your watchword: Battle Creek, September 4, 5 and 6.

PREPAREDNESS.

The Medical Department of our Army has made the whole world a debtor. It was an army surgeon who slew the hookworm in Porto Rico; it was an army man who fought to the death with yellow fever in Havana and conquered it; it was an army man who made the disease-breeding swamps of Panama into a zone of health; it was an army man who perfected camp sanitation and disease prevention during mobilization. And so might one continue to enumerate the world-wide influence that has followed the studies and discoveries of the men now enrolled in the medical department of our army. Noble, whole-hearted, thinking not of or for themselves but for their country and country's good. We may well be proud of our professional brothers thus serving our country. Small though the credit awarded them, great and enduring are these, their achievements.

The thought presents, Doctor, what are you doing or what do you propose to do in this crisis that now presents. You ask: "What can I do?"—Place yourself available to your country by enrolling in the Medical Reserve Corp. Write to the Surgeon-General, Washington, for the prescribed blank and information. Familiarize yourself by selected reading, with the duties of medical officers when in camp or active campaign. Become acquainted with army tactics and operations. Study the problems of camp sanitation and hygiene. Be possessed of the knowledge of medical and surgical activities in mobilization. This done you will, when needed, be able to render greater and efficient service. You whose attachments

are light and not deeply rooted, we urge that you consider enlistment to fill the vacancies that exist in the army and navy medical corps. Your country needs NOW men who will enter this service. Many vacancies exist and recruits must be obtained from the profession at large.

To some the need may seem small with the urgency of the necessity lost to view. You may not realize the absolute demand that imperatively calls for professional recruits. The crisis is of far more reaching seriousness than many of you believe. Our Country, *your* Country needs Doctors now. Michigan must promptly respond to call and we Doctors must assume our part.

God forbid that you stand idly by until the hour has struck, when the foe is at our door and we medical men have failed to do our part to be prepared for the dire eventualities that will surely follow. The responsibility is graver than many are inclined to realize. We must awaken from our lethargy.

God of our fathers, known to all—
Lord of our far-flung battle-line—
Beneath whose awful Hand we hold
Dominion over palm and pine—
Lord God of Hosts, be with us yet,
Lest we forget—lest we forget!

For heathen heart that puts her trust
in reeking tube and iron shard—
All valiant dust that builds on dust,
And guarding calls on Thee to guard—
For frantic boast and foolish word,
Thy mercy on Thy people, Lord!

LAPSED MEMBERSHIP.

April First ends the period of grace for the payment of *Society Dues*. He who has neglected to pay his current dues is automatically suspended and the name is removed from our mailing list; medico-legal defense is likewise forfeited and action brought for alleged professional neglect during the period of suspension will not be defended at any future time.

We dislike to be compelled to harp upon this subject or keep "poking" the delinquent. We would be negligent if we did not issue a warning notice, so here it is: *Membership Dues unremitted by April First causes your suspension. Remit to your County Secretary today.*

Editorial Comments

This issue contains an extended list of book reviews. It is impossible to devote a large amount of space to the review of the many excellent books that are appearing from month to month. Our purpose is to but indicate the general scope and trend of each volume and here and there emphasize special features. Although often tempted to devote extended space to some texts we are compelled to desist because it would simply lead to a reviewing department occupying half of our publication.

We do not pose as a bibliomaniac yet we are warmed with admiration and impressed with the value of many of the new texts that confront us. The wish is often voiced that we would it were possible for every Michigan physician to secure, read and apply the material imparted in these publications. Especially do we urge our readers to secure as many of these new publications as their funds will permit and acquire the habit of devoting one, two or three hours to daily reading.

Next month we will endeavor to review the enactment of this year's session of the legislature in so far as they pertain to the profession, medical and public health matters.

Our medical colleges are commencing to advertise their spring and summer courses. Until one has participated in these courses he does not fully realize their value. We suggest that you arrange your summer plans so that it will be possible to pursue some clinical course and we prophesy that you will not regret the time devoted.

Our Fifty-Second Annual Meeting to be held in Battle Creek, Sept. 4, 5 and 6 will assuredly

be a most noted and profitable one. The Scientific Committee has arranged for a most up-to-date, live program. The sessions of our sections are going to be crammed-full of excellent papers and discussions. You simply cannot afford to miss this meeting.

Dakin's solution has become to be so widely used that we wonder at times if it is wisely employed. To secure the greatest good, certain essentials are important: A properly compounded, neutral solution; a fresh solution not older than three days; the wound or infected part must be provided with free and ample drainage outlets; the solution must be constantly employed, or better, every nook and corner of the wound thoroughly flushed with it every two hours; re-infection must be prevented by protective dressings and dressings renewed by using sterile instruments and gloved hands. Carrel's technic rigidly observed produces really wonderful results. He who masters this technic may approach infectious processes with greater confidence and assurance.

Did you read the proposed new feature of membership—Group Life Insurance—as announced in our March issue? Have you expressed your views upon the subject to your State Secretary? If not you are urged to turn to our last issue, read the suggested plan and then write us your opinion.

We would all be specialists—impressive title—but let's first be true to our patients and to ourselves. If we are general practitioners why not be honest and admit it and strive to be and remain in the class of the best general practitioners. If we pose as specialists, likewise let's strive to be actually the best specialist in our chosen field and exert ourselves to so perfect ourselves and devote our sole time to our specialty and not dabble beyond the boundary. The profession and public have but little confidence and respect for the eye man treating as a sideline mammary tumors or constipation; the pediatrist treating pneumonia or stomach troubles of adults; the gynecologist removing tonsils in children; the surgeon attending an infant with summer complaint. We either are or are not a true specialist but why not be honest and not pose as one and then act as if the term conveyed specialistic ability in every field of medicine and surgery. To be a competent and reliable specialist one cannot dabble.

We are really proud of our advertising section. We invite you to carefully read each advertisement. Then write to these advertisers and if you do not enclose an order at least tell them you have seen their ad. and that you appreciate their patronage of your journal.

There must be greater individual enthusiasm and honest zeal exhibited by every medical man in Michigan if we hope to reap the fullest benefits of organized effort. There must also become evident a marked abatement of bickerings and jealous criticism if scientific medical progress is to be reflected by our schools, clinics and hospitals. Unity of purpose, success and progress for ourselves and our neighbors will not occur unless we are willing to boost every good, progressive movement even though we personally are not to be the gainer. If you whole heartedly and unreservedly boost your neighbor he in turn will boost you. But forget the: "Where Do I Come In" squawk.

A timely subject for a medical meeting would be the discussion of your local hospital or hospitals. Does it meet up to the present day standard? Is it employing modern methods of administration? Is it capable of administering present day treatment? Are the members of the staff utilizing its clinical material? Is its training school properly conducted? How may improvements be accomplished? A free, candid, constructive consideration of the entire scope of the hospital activities in your vicinity is bound to be beneficial to the community and local physicians.

Over $10,000 of unsettled doctor's bills in compensation cases alone in Detroit. Such is the information imparted by an individual fully

acquainted with the subject. Why? He replied: "Because there are doctors who think that corporations and employers are easy-marks and will stand for 'farming-cases,' excessive charges, unnecessary operations, trumping up cases and stating that conditions are the result of injuries when in reality they are the evidence of pathological disease and for palpable deception." When asked: "Will they ever be paid in full or in part?"—the reply: "Never in full, some in part, some not at all. The amount will grow larger if the doctors do not renounce some of their present methods." A graphic situation, explanation and suggested remedy. Detroit alone does not harbor all these cases—they are state-wide.

Its been a hard, long winter. The nights have been bitter cold, the snow was deep, at times you are simply swamped. Tired, of course you are, your manner has become a little more brusk and your replies are frequently irritated snappings. It's not all your fault nor are you entirely to blame. No one can respond to the exacting calls made on a doctor and not reflect it when physical weariness reveals itself. You will, however, be culpable if you do not break away for a week or two of rest and recuperation. April is the month to do it in. Get away and into a new environment for a couple of weeks.

Sometime ago—last fall—solicitors appeared in Michigan calling on doctors with the proposition that if stock was taken in a proposed new Chicago life insurance company that the doctor would be appointed medical director for the company in that vicinity and pass on all the policies written. We noted a week ago that the promoters have been arrested and convicted of fraud upon complaint of several victims. This is but another instance of the doctors being the easy mark. When the millenium arrives, and we fear that not until then, doctors will learn that reputable bankers and stock brokers of known repute are the only avenues through which safe investments may be made. There are a goodly number of "Get-Rich-Quick Walingford's" floating around ready and eager to separate you from your hard earned dollars. It seems that one must be stung from one to a half-dozen times before immunity is acquired.

Everything can happen in the next hour that has ever happened. It contains all the possibilities of a universe. In the next hour children will be born, men and women will die, whole worlds will be smashed to atoms and drop out of space, and the girl you love go back on you. In the next hour the house may burn, you may quarrel with your best and dearest friend, someone may give you poison, your fortune may be stolen, the Government may change, and the world may come to an end.

You plan how you will pass the next hour and, lo! the train is ditched, the auto turns turtle, Aunt Jane arrives, the neighbor's baby has convulsions, the house is struck by lightning, your tooth begins to ache, a telegram is delivered, the wires are out of order, you are discharged, somebody dies and leaves you a fortune, you are operated upon. The next hour is what you ever were and what you ever may be compressed into sixty minutes. It is the period of hope deferred, of supreme victory, of total annihilation, and the entrance to an assured immortality. Unalterable as the law of gravity, it stands before you like the grim sphinx, containing within itself all the marvelous variety of human experience.

To know how to meet the next hour with joy, with head erect, with courage singing in your heart, is to solve the deep mystery of eternity.—"Selected."

Your annual dues must be paid to your County Secretary before April First if you wish to remain in good standing. If you have not paid your current dues for 1917 do so at once and so avoid being placed on the suspended list.

Correspondence

Avon Lake, Ohio, March 12, 1917.

My Dear Dr. Warnshuis:

It will interest you to know that we have won the first legal round of the Kentucky fight.

Dr. McCormack has just notified me that

"Judge Kirby, the Chancellor in Louisville, has just handed down a splendid opinion, upholding our every point in the nurse-anesthetist case."

The Attorney General will immediately pursue his advantage and take the case to the Kentucky Supreme Court for final adjudication. The case which the Attorney General will present will be all the stronger, as we now have the emphatic support of Dr. A. D. Bevan, Chairman of the A. M. A. Council on Medical Education.

Your editorial stand will presently have sufficient backing to make it impregnable.

Hoping this will be good news to you, I remain, as ever

Cordially yours,

F. H. McMECHAN, M.D.

Big Rapids, March 14, 1917.

Dr. Warnshuis, Secretary State Medical Society,
Grand Rapids, Mich.

Dear Doctor:

Under date of February 27, 1917, I received a letter from the Internal Revenue Collector of the Fourth District located in Grand Rapids, Michigan, which was a regular form letter evidently printed in large number and sent to a great many persons throughout the District, of which the following is a copy:

Grand Rapids, Feb. 27, 1917.

Sir:

The records of this office show that you are registered under the Harrison Narcotic Act for the four months ending June 30, 1915 and also for the twelve months ending June 30, 1917, but that you did not register for the year ending June 30, 1916. You will therefore please at once file the enclosed application and return same to this office with $1.50.

Respectfully,

E. J. DOYLE, Collector.

As a matter of fact, I had registered under the Harrison Act for the period in question and had the license displayed in my office for something more than a month after the period covered by the license. I was surprised to learn that Dr. W. T. Dodge of this city and Dr. Geo. H. Lynch had also received similar letters.

About a month after the receipt of the new license for the term ending June 30, 1917, Dr. Dodge and myself both destroyed the old license consequently had this part of the evidence lacking. Dr. Lynch, on the contrary, merely by chance saved his and we all three replied to the letter written by the Collector. Under date of March 12, 1917, the following letter was received:

"Your letter of the 28th ult., is received, and you are advised that the records of this office do not show that you were registered under the Harrison Narcotic Act for the year ended June 30, 1916, and you will therefore please execute the enclosed application and return same with $1.50.

Your truly,

EMANUAL J. DOYLE,
Collector.

In spite of the fact that Dr. Lynch has his license, they still insist on his paying the second fee. In this connection it might be interesting to learn by an inquiry through the *"Journal"* how many doctors throughout the Fourth District received similar letters, also how many of those who received such letters still have their licenses on hand for the period in question. It seems that there is either a lax method of keeping records in their Grand Rapids office or new management should be substituted for the present officers.

As a matter of fact, both Dr. Dodge and myself have plenty of evidence that we had the licenses in question and do not propose to be imposed upon it there is any way of getting at the records of the Grand Rapids office for a thorough search.

Respectfully yours,

CLYDE F. KARSHNER.

Deaths

George G. Burns, A.B., M.D., was born in Muskegon, Michigan, March 8, 1876, and passed on February 23, 1917, at Blodgett Memorial Hospital at Grand Rapids, Michigan, not regaining consciousness after having undergone a minor operation.

Dr. Burns possessed a personality that endeared him to his friends. When one had arrived within the inner circle of his friendship you somehow felt that that friendship was different, you felt that it was something valuable, something to be retained.

While Dr. Burns had confidence in himself yet he was modest and unassuming. His professional position in Fremont on account of his surgical successes was a flattering one to a man susceptible of adulation, but Dr. Burns could not be flattered, bought or scared.

The loss to the profession of this brilliant high souled physician is commensurate only to

the loss to the community of Dr. Burns as a citizen.

Voicing the opinion of the Newaygo County Medical Association I can most truly say that

George G. Burns, A.B., M.D.

"he was a man take him for all in all, I shall not look upon his like again."

CHAS. B. LONG, M.D.,
Secretary-Treasurer of Newaygo County Medical Society.

Dr. H. Elwood Retan died in Phoenix, Arizona, and was brought back to his home in Weston for burial.

Dr. H. W. Heasley who has been a practicing physician at Burnips Corners for twenty-five years died in the Harper Hospital, Detroit. At the time of his death he was a resident of Grand Rapids.

Dr. LeRoy Weaver died at his home in Lansing as the result of a stroke of apoplexy.

State News Notes

PRACTICE—$3,000 or better in live Southern Michigan town to purchaser of equity in modern home, office furniture and drugs at actual cost. No bonus. Good roads. Competition right. Thorough introduction and recommendation. Address O. H. Jennings, 61 Garfield Ave., Detroit, Michigan.

DETROIT COLLEGE OF MEDICINE AND SURGERY STARTS CAMPAIGN FOR MERGER.

Plans for the amalgamation of the Detroit College of Medicine and Surgery with the University of Michigan, by which it is hoped not only to save the former institution from extinction but, as well, to provide for the extension to that city of the undergraduate work of the medical students at the Ann Arbor seat of learning, were launched Thursday afternoon.

This was the result of the special meeting of the Board of Trustees of the Detroit college in the directors' room of the First and Old national bank, called to consider the offer of the university. After an enthusiastic session, the trustees voted to accept the offer as it stood, providing for the raising of a fund of $1,000,000 with which to greatly enlarge the equipment and the scope of the local training school.

Sidney T. Miller, chairman of the board, was empowered to appoint a special committee of five, which will immediately begin to arrange the details of the amalgamation and setting up the machinery for the $1,000,000 fund. It is planned to make as quick a campaign as possible and it is believed that the response will be so generous that there will be little or no difficulty in obtaining the desired amount, when the needs of the institution are made known to the public spirited men and women of Detroit.

The project to amalgamate the Detroit College of Medicine with the medical school of the University of Michigan is recommended by the American Medical association and promises for this state facilities in medical education which should not be excelled anywhere in the world.

The medical school of the university has held a high standing since it was founded and is now considered one of the best in the country. Its equipment for search and clinical work is complete; its faculty is composed of leaders in their respective fields. The university has raised its standards of admission to the medical school until only the most desirable and best prepared students enter and graduate. The contemplated absorption of the Detroit college would give the work of the fifth year, in which students serve on hospital staffs, larger scope than is possible in Ann Arbor. The wide range of cases which find their way into Detroit hospitals would supply the invaluable bedside experience at its best.

The Detroit school has served its purpose well, but its perpetuation has in late years entailedn a degree of hardship on the busy specialists who constitute the faculty and have kept the institution alive. It has been proposed to re-establish this school with a large endowment, which would mean the maintenance of two large, first-class schools within forty miles of each other, a wasteful duplica-

tion of effort in this day of specialization in medicine and surgery.

The dairy and food department's bill for the regulation of the patent medicine business is being grossly misrepresented. The proposal before the legislature does not aim to compel medicine makers to print the formula on the bottle, as it is claimed by opponents of the measure. The intent of the bill is best told in the words of the dairy and food commissioner, Fred L. Woodworth, in an official statement, which reads:

"The State Dairy and Food Department is charged by law with the inspection of all drugs and medicines as well as food in this state. It is made the duty of the department to find out what people put into their stomachs for medicines as well as foods. There are several thousands of proprietary remedies on the market. Many of them have merit, some are useless, and some are plain frauds, like the consumption and cancer cures. To analyze and inspect all these remedies would cost the state a great deal of money and yet the people should be protected from imposition in the medicine line.

"The State Dairy and Food Department, after careful study of the situation, drafted a bill to meet the situation fairly for all concerned. House Bill No. 187, introduced by Representative Littlejohn, is not the product of any so-called "Doctor's Trust." It was drawn by the dairy and food commissioner. No doctor except Representative Littlejohn ever saw it before it was introduced. No doctor was consulted in the drafting of it. It is being misrepresented by advertising agencies and others as a 'formula disclosure' bill. There is not a line in it compelling the disclosure of any formula. The bill simply provides that manufacturers of proprietary remedies shall register the names and furnish a sample of their product to the dairy and food commissioner. This saves the state the expense of traveling inspectors to pick up the samples. It provides that each manufacturer shall pay to the department ten dollars for the first registration and five dollars for each subsequent one to meet the cost of inspection and analysis.

"If the manufacturer wishes to avoid paying this inspection fee he can do so by disclosing his formula and thus save the Department the expense of analysis, but if he pays the inspection fee he is not obliged to disclose the formula. No manufacturer of a meritorious proprietary remedy can reasonably object to the provisions of this bill. The objections of the manufacturers of fakes should be disregarded. The bill will make conditions better for the owner of a preparation of merit. The only restriction on advertising in the bill is that advertisements of remedies claiming to cure consumption, cancer and other admitted non-curable disease, should be prohibited.

"All reputable newspapers already refuse this kind of advertising. Yearly the manufacturers of proprietary remedies take large sums from the people of the State; most of them are located outside the State and pay no state tax. Why should they object to paying a paltry fee to reimburse the state for its inspection of their products? The bill as drawn does not affect the retail drug trade, and preparations made by the local druggist are specifically exempt under the terms of the act."—Detroit Saturday Night.

The following deaths of physicians in Michigan not members of the Society occurred during the latter part of February and March:

Dr. C. B. Chapin, Benton Harbor, Dr. George C. Gordon, 428 Lincoln Ave., Detroit; Dr. C. M. Book, Greenville; Dr. Reuben Osborne, Detroit; Dr. George C. Gordon, Detroit and Dr. Orson Millard of Flint.

Dr. J. S. Brotherhood, Grand Rapids, has withdrawn from the Grand Rapids Clinical Laboratory and announces the opening of offices in the Metz building for the application of modern diagnostic methods and consultation in internal medicine.

The Detroit Ophthalmological and Otolaryngological Club tendered a complimentary dinner on March 21 in the Statler Hotel to Dr. Eugene Smith, the dean of that specialty in Detroit. Dr. Smith has been in practice fifty-six years.

The Genesee County Society has secured the consent of the Flint Board of Education to use part of the city library for the purpose of establishing a medical library.

Dr. Reuben Peterson of Ann Arbor delivered a lecture on Military and Medical Preparedness in Michigan before the Calhoun County Society on March 6th.

Dr. F. B. Tibbals, of Detroit, who has been seriously ill is recuperating in the South and expects to resume practice in two weeks.

Dr. F. J. Smith, of Detroit, and Miss Jeanie W. Smart, of Lutherville, Md., were married on Feb. 17, 1917.

Dr. J. D. Bruce has returned to Saginaw after a four months service in British Army hospitals in England.

Dr. Wm. H Price has resigned as health officer of the city of Detroit. Dr. J. W. Inches of St. Clair has been elected as his successor.

Dr. L. L. Burkhart has been supplanted as Secretary of the State Board of Health by the election of Dr. Olin to that office.

Dr. Walter Parker, of Detroit, conducted an eye clinic at Alpena on March 3d.

Dr. G. H. De Nike of Buchanan was sentenced to Ionia on an indeterminate term for manslaughter, following a criminal abortion.

Dr. M. O. Blakeslee, of Jackson, has resigned as health inspector, and has removed to Ionia where he will engage in practice.

Dr. R. M. Cooley, of Jackson, has been appointed to temporarily fill the position of health inspector of the local board of health.

Dr. F. L. Rice, of Owosso, sustained serious multiple fractures of arm and leg by being struck by an interurban car.

Dr. N. J. Robbins, of Negaunee, is a candidate for mayor.

Dr. Bennets succeeds Dr. R. C. Main as health officer of Marquette.

County Society News

A. C. E. COUNTY

The A. C. E. County Medical Society, composing the counties of Antrim, Charlevoix and Emmet, met in regular session in the Cushman House parlors, Tuesday evening, March 13, 1917.

Dr. H. B. Armstrong of Charlevoix, President, presided. Twelve members were present. Under the head of general business, the following resolution was offered by Dr. J. J. Reycraft. Resolved, That the members of this Society, request the law covering dry territory, make it obligatory to have liquor prescriptions signed by the Prosecuting Attorney and an ordained Minister, before a druggist can, legally, fill the same."

After being supported by Dr. Howe of Boyne Falls, an earnest and spirited discussion by all present was participated in, finally terminationg in a resolution, offered by Dr. Nihart to lay it on the table which was supported by Dr. Armstrong. Motion was carried.

Dr. Armstrong then read a very interesting and instructive paper on The Pathology of Acute Poliomyelitis which was well received and drew out a general and valuable discussion. Some phases of Indigestion, also received attention. Dr. Wilkinson of Charlevoix, Dr. J. J. Reycraft, Petoskey, and Dr. Conklin, Boyne Falls were assigned to furnish papers for our next meeting.

All in all this was one of our best meetings.

G. W. NIHART, Secretary.

ALPENA COUNTY

The regular monthly meeting of the Alpena County Medical Society was held at the New Alpena House, Thursday, March 15, at 6 p. m. The following members being present: Drs. Dunlop, Bell, Cameron, Secrist, L. Secrist, Small, McDaniels, McKnight, Bertram, Purdy, Williams.

Drs. Cameron and McDaniels being the hosts.

The report of the Committee on Medical Fees was received and discussed, action being postponed for another month.

Dr. Bell addressed the Society in behalf of a strict adherance to the code of Ethics of the American Medical Society. His remarks were so well received that the Secretary was instructed to order a copy of the ethics, and give to each member for study. Dr. Bell was appointed lecturer on ethics, and asked to discuss the first subject at the next meeting.

The scientific paper of the evening was given by Dr. J. D. Dunlop of Alpena. His subject Physical Diagnosis. The paper dealt with the value of careful physical examinations, especially those of value in disclosing disease of the chest.

Both the papers of Drs. Bell and Dunlop were thought by the Society to be of value to the Profession as a whole, and the secretary was requested to forward them to the *State Medical Journal* for publication.

C. M. WILLIAMS, Secreary.

The following officers were elected for the Alpena Medical Society for the year 1917.

President—J. W. Purdy, Long Rapids.
Vice-President—Leo Secrist, Alpena.
Secretary-Treas—C. M. Williams, Alpena.
Delegate Med. Meeting—D. A. Cameron, Alpena.
Alternate—C. M. Williams, Alpena.
Medico-Legal—E. E. McKnight, Alpena.

C. M. WILLIAMS, Secretary.

CHIPPEWA COUNTY

A regular meeting of the Chippewa County Medical Society was held at the Park Hotel, this city, on Tuesday evening, March 6. President J. J. Lyon in the chair. Minutes of the meeting held Feb. 6, were read and approved.

Under "Clinical Cases" report was made of a case of poisoning by taking 22½ grains of bichloride of mercury, in which anuria was complete, and emesis and bloody stools had been almost continuous a few hours following the ingestion of the poison. Patient in hospital under treatment, eight days, death impending.

Dr. E. H. Webster read a paper on "Interstitial Pneumonia" which was greatly enjoyed and fully discussed by the members.

EATON COUNTY

Members and guests of the Society were entertained by Doctor and Mrs. W. E. Newark at the Charlotte Sanatarium for dinner at 12 o'clock. Following this most excellent meal the scientific program was held at the Arcade Theater.

1. "Experiences with Interposition Operation for Extreme Prolapse."
   Dr. Reuben Peterson, Ann Arbor.
2. "Treatment of Fractures."
   Dr. C. D. Brooks, Detroit.

Both talks were accompanied by lantern slides.

Interesting discussions followed each talk.

A report was made of the work accomplished by the committee appointed at meeting held March 6, regarding campaigning and assisting in securing favorable action on the proposition of bonding the county for the sum of $25,000 to help make up the $60,000 required to assure the building of a new hospital.

Miss Parker, tuberculosis nurse, appeared before the members and requested that they take under consideration the matter of giving, gratuitously, their services in the inspection of school children.

Dr. J. J. Griffin, city health officer, talked on the urgent need of school inspection, and bespoke the co-operation of all members of the Society in helping out the tuberculosis nurse and in securing the great benefit to the community, of her work amongst us.

Rollin C. Winslow, Secretary.

MANISTEE COUNTY

At the regular meeting of the Manistee County Medical Society held January 30, 1917, the following officers were elected:

President—Dr. E. S. Ellis, Manistee.
Vice-President—Dr. Norconk, Bear Lake.
Secretary—Dr. Homer A. Ramsdell, Manistee.
Treasurer—Dr. H. D. Robinson, Manistee.
Delegate—Dr. H. D. Robinson, Manistee.
Alternate—Dr. L. S. Ramsdell, Manistee.

Following the election of officers the paper of the evening was read by Dr. P. C. Jensen on the subject of Prophylaxis, which was discussed by the members present. It was voted because of the excellence of the paper to have it published in the Manistee News-Advocate.

Homer A. Ramsdell, Secretary.

MARQUETTE-ALGER COUNTY

At the annual meeting of the Society held at Negaunee on December 16, the following officers were elected.

President—R. A. Burke, Diorite.
Vice-President—Isaiah Dicotte, Michigamme.
Secretary-Treas.—H. J. Hornbogen, Marquette.
Delegate—V. H. Vandeventer, Ishpeming.
Alternate—A. W. Hornbogen, Marquette.

A regular meeting was held on January 30th at Marquete. The program consisted of a symposium of lobar pneumonia.

Symptomatology, Clinical Coure—F. A. Felch.
Bacteriology—R. C. Mane.
Pathology—L. W. Howe.
Treatment—H. S. Smith.

Pneumonia is more prevalent in this county at present than it has been for years. Up to January 30th 64 cases were reported in Marquette city with 13 deaths.

H. J. Hornbogen, Secretary.

A meeting of the Society was held in Marquette on February 28, 1917.

The attendance at this meeting was large and the paper (Focal Infections) presented by Dr. Paul Van Riper of Champion was well received and elicited much discussion.

Applications for membership were presented by Drs. Harold Markham and Lowell Youngquist of Marquette.

The committe on program have provided for meetings to be held during the summer months at Munising, Gwinn, Michigamme. These meetings will partake of the nature of outings to which the women will be invited.

H. J. Hornbogen, Secretary.

MUSKEGON-OCEANA COUNTY

On Feb. 16 the Society met at Hackley hospital and Dr. P. M. Hickey of Detroit was present and gave us an illustrated talk on Roentgenology. Dr. F. W. Garber was elected president for the current year at the last meeting of last year.

C. J. Bloom, Secretary.

NEWAYGO COUNTY

The annual meeting of the Newaygo County Medical Society was held and the following officers were elected for 1917.

President—Dr. Willis Geerlings, Reeman, Mich.
Vice-Pres.—Dr. Wm. Barnum, Fremont, Mich.
Sec'y-Treas.—Dr. Chas. B. Long, Fremont, Mich.

George G. Burns, A.M., M.D., was born in Muskegon, Michigan, March 8, 1876, and passed on February 23, 1917, at Blodgett Memorial Hospital at Grand Rapids, Michigan, not regaining consciousness after having undergone a minor operation.

Dr. Burns possessed a personality that endeared him to his friends. When one had arrived within the inner circle of his friendship you somehow felt that that friendship was different, you felt that it was something valuable, something to be retained.

While Dr. Burns had confidence in himself yet he was modest and unassuming. His professional position in Fremont on account of his surgical successes was a flattering one to a man susceptible of adulation, but Dr. Burns could not be flattered, bought or scared.

The loss to the profession of this brilliant high souled physician is commensurate only to the loss to the community of Dr. Burns as a citizen.

Voicing the opinion of the Newaygo County Medical Association I can most truly say that "he was a man take him for all in all, I shall not look upon his like again."

Chas. B. Long, Secretary.

ST. CLAIR COUNTY

The St. Clair County Medical Society held its regular bi-monthly medical meeting at the Harrington Hotel, Thursday evening, February 22. Dr. C. W. Kuhn of Detroit being the guest for the evening.

After dinner the meeting was called to order by the President, Dr. Chester. An application for membership was received from Dr. Bowden, a recent practitioner of Sioux City, Iowa. Committee appointed to act on application: Drs. Cooper, McKenzie and Heavenrich.

Dr. Kuhn was introduced to the Society and presented a very interesting paper on "Intestinal Obstruction" which was appreciated by all. Discussion was opened by Dr. Heavenrich, followed by other members of the Society.

A vote of thanks was extended to Dr. Kuhn.

Thirty-seven members of the Society were present.

W. W. RYERSON, Secretary.

The St. Clair County Medical Society held their regular meeting at the Harrington Hotel, Thursday evening, March 8.

After dinner, the President, Dr. Chester, called the meeting to order.

Dr. S. K. Smith gave a short and instructive talk on acidosis which appreciated by all.

Dr. J. Moffett read a very interesting paper on Tonsilar Infections, with lantern slide demonstrations, which was very instructive.

The fee bill was discussed to a great extent. The rates being increased. Day calls in city, $2.00; night, $3.00; confinement cases, $25.00.

A large attendance was present.

W. W. RYERSON, Secretary.

Book Reviews

See Editorial Comments

THE SURGICAL CLINICS OF CHICAGO: Vol. I. No. I, February, 1917—83 illustrations. W. B. Saunders Company, Philadelphia. Price $10.00 per year. Published bi-monthly.

The reviews is confronted with the first issue of this new surgical series. One recognizes the similarity of arrangement to that of Murphy's Clinics. However, there is not imparted the same emphasis to the basic points of the subject discussed as Dr. Murphy was want to convey. Neither are the diagnostic points made to stand out with equal clearness and the operative technic description lacks continuity. Notwithstanding these criticisms there is much of interest and instruction to be found. The cases reported and discussed are from the clinics of Bevan, Oschner, Andrews, Beck, Eisendrath, Kanavel, Lewis, McArthur, Phemister, Plummer, Ryerson, Speed.

The possibility presents and no doubt the opportunity will be seized to make a series of valuable one. We urge hearty support to the series.

A MANUAL OF NERVOUS DISEASES, by Irving J. Spear, M.D., Professor of Neurology at the University of Maryland, Baltimore. 12mo. of 660 pages with 169 illustrations. Philadelphia and London: W. B. Saunders Company. 1916. Cloth $2.75 net.

The purpose of this volume is to enable the general practitioner to acquire the necessary facts for a proper understanding of the anatomy and physiology, and the diseases of the nervous system. In as much as a thorough understanding of the anatomy and physiology of the subject is of such primal importance the author has admirably smoothed the way in his lucid presentation and so enables one to understand and interpret the abnormal variance. If one will but acquire unto himself these basic facts the difficulty of many cases of mental and nervous disease will be surmounted.

We cordially recommend this volume to our readers believing it to be a most helpful text.

A TREATISE ON DISEASES OF THE SKIN. For use of advanced Students and Practitioners. By Henry Stelwagon, M.D., Ph.D., Professor of Dermatology, Jefferson Medical College, Philadelphia. Eighth edition, thoroughly revised. Octavo of 1309 pages, with 356 text-illustrations, and 33 full-page colored and half-tone plates. Philadelphia and London: W. B. Saunders Company, 1916. Cloth, $6.50 net; Half Morocco, $8.00 net.

This standard work, revised to date, shows many changes and considerable new matter. The occupational diseases of the skin is indeed a welcome addition. This text has always been well illustrated and its value is now still more enhanced by the insertion of some thirty-five new cuts.

The practitioner and specialist may turn to this volume with the assurance that he will secure dependable information and assistance. If one is seeking for the most useful volume on the subject, we would by all means recommend Stelwagon's Treatise.

CLINICAL TUBERCULOSIS. By Francis M. Pottenger, A.M., M.D., L.L.D., Medical Director Pottenger Sanitarium, Monrovia, Calif. With a Chapter on Laboratory Methods by Joseph E. Pottenger, A.B., M.D. Cloth. Two volumes. Illustrated. C. V. Mosby Co., St. Louis.

These two volumes are a record of the author's extended observation during twenty years of clinical study and is the viewpoint of a clinician. The subject is not discussed from the narrow view that tuberculosis is caused by a bacillus producing pulmonary tubercles requiring fresh air and sunlight for treatment. It is a discussion of the disease as an infectious disease producing changes in organ or organs and directly influencing every body cell.

The work is in reality a series of monographs dealing with practically every phase of the subject, anatomy, laboratory, complication, etc., etc. Throughout there is always the practical application. One reads of symptoms and the treatise is such that the picture of the actual pathology is carried in the mental picture.

All in all it is a broad, modern presentation of the entire subject. It will be accorded a hearty reception.

CLINICAL AND LABORATORY TECHNIC, H. L. McNeill, A.B., M.D., Galveston, Texas, 88 pages, illustrated. C. B. Mosby Co.

This is a handy manual and contains a formula

for all laboratory tests that are of practical value in making diagnosis. It is just the reference one should have in his laboratory.

PRACTICAL URINALYSIS, B. G. R. Williams, M.D. Cloth, 136 pages, illustrated. C. V. Mosby Co.

This little volume will enable the practitioner to find and interpret the meaning of those other minor practices of excretion that have an important bearing upon diagnosis of diseased conditions. It is an excellent manual and should save the purchaser many times its original cost.

NEW METHODS OF BLOOD AND URINE CHEMISTRY. R. B. H. Gradwohl, M.D., Director Pasteur Institute, St. Louis and A. J. Blairas. 235 pages, 65 illustrations. Cloth. C. V. Mosby Co., St. Louis.

This work has been undertaken in response to a request from the author's personal friends, who have been interested in this line of investigation. There is no claim made for originality but the work combines a collection of information that has been widely scattered through the literature for the past three or four years. Investigations in blood chemistry have been proceeding so rapidly within recent years that this welcome summary on the subject is of additional value. Various tests of blood are imparted by giving the author's technic and procedure in his own laboratory. The volume should meet with universal approval and be of valuable assistance to every laboratory worker as well as to the profession of Michigan.

AMERICAN PUBLIC HEALTH PROTECTION by Henry B. Menenway, A.M., M.D. Cloth. 238 pages. Price $1.25. Bobbs Merrill Company, Indianapolis.

The author endeavored to arouse the public to realize the importance of efficient public health administration. It appeals to women of the country to become active in public health work and imparts information as to the activity and progress that is being made by public health authorities throughout this state.

PRACTICAL MEDICAL SERIES. The Year Book Publishers, 327 So. LaSalle St., Chicago. Series of 1916, Vol. 7-8-9-10. Price of series of 10 Volumes $10.00. These four volumes on Obstetrics are by D. Lee, Therapeutics by B. Evans, Skin and Venereal Diseases by Ormsby Mitchell, Nervous and Mental Diseases by Patrick Bossoe, which maintain the high standard of this publication series and presents therein the review of the latest information upon the subjects treated as has appeared in the literature of the year.

Every practitioner who wishes to remain abreast of the times should become a subscriber to this series and use it as a guide for his enlarged reading upon the progress of medicine, surgery and its allied specialty. It is one of the most satisfactory series that is presented to the profession.

PRACTICAL BACTERIOLOGY, BLOOD WORK AND ANNUAL PARASITOLOGY. Including Bacteriological Keys, Zoological Tables and Explanatory Clinical Notes, by E. R. Stitt, A.B., Ph.G., M.D., Medical Director, U. S. Navy, etc. Fourth edition. Cloth, illustrated. 493 pages. P. Blakiston's Son & Co., Philadelphia.

Thoroughly revised and up to date notes of a course along the laboratory side of internal medicine. It is excellently gotten up and a most complete practical presentation. It is just the volume that should be on the desk of every sincere practitioner and once used it will be turned to daily for helpful assistance.

A MANUAL OF THERAPEUTIC EXERCISE AND MASSAGE. Designed for the use of physicians, students and masseurs. By C. Herman Bucholz, M.D., Orthopedic Surgeon Mass. General Hospital. Cloth, illustrated, 427 pp. Lea & Febiger, Philadelphia.

When one realizes the importance and necessity of intelligently instituted exercises and massage to correct deformities and physical defects he will appreciate the practical value of this volume. This therapeutic measure is often neglected and the profession needs to familiarize itself with the subject. This manual will blaze the way. It is clear in its presentation. Farther, it understandingly imparts the necessary exercises so that the instructor may be readily transmitted to the patient. The work wins our approval and merits a broad reception.

CARE OF PATIENTS undergoing Gynecologic and Abdominal Procedures, before, during and after operation by E. E. Montgomery, M.D., Professor of Gynecology in Jefferson Medical College, Philadelphia. 12mo of 149 pages with 61 illustrations. Philadelphia and London: W. B. Saunders Company. 1916. Cloth, $1.25 net.

A satisfactory manual for training and reference for a training school library.

BLOOD-PRESSURE, From the Clinical Standpoint, by Francis Ashley Faught, M.D. Formerly Director of the Laboratory of Clinical Medicine at the Medico-Chirurgical College, Philadelphia. Second edition, thoroughly revised. Octavo of 478 pages, illustrated. Philadelphia and London: W. B. Saunders Company, 1916. Price $3.25 net.

This work truly contains the pith of medical literature bearing on blood pressure studies in their relation to medicine, not only in cardio-vascular and renal conditions, but also in many diseases in which clinical observation has shown the information obtained by the sphygmomanometer to be of value. As such then it must of necessity be in the possession of every physician in order that he may be fully familiar with the subject.

PHARMACOLOGY AND THERAPEUTICS For Students and Practitioners. Horatio C. Wood, Jr., M.D., Professor of Pharmacology and Therapeutics, University of Pennsylvania. 2nd Edition. Cloth, 455 pages. Price $4.00. J. B. Lippincott Company, Philadelphia.

A most satisfactory text containing the latest information.

HANDBOOK OF SUGGESTIVE THERAPEUTICS, APPLIED HYPNOTISM, PSYCHIC SCIENCE. By Henry S. Munro, M.D., Omaha, Neb. Fourth Edition, revised and enlarged. Cloth, 481 pages. C. V. Mosby Company, St. Louis.

This is a practical manual designed especially for the practitioner of medicine, surgery and dentistry. It is practical and applicable and deserves more and more the physician's attention. It is not a subject that should be relegated solely to the alienist. The doctor should become more familiar with its principles and to do so this handbook provides an excellent means.

Miscellany

PROPAGANDA FOR REFORM.

Glycerophosphat Comp. Ampuls, 1 Cc., Squibb.—The Council on Pharmacy and Chemistry refused recognition to Glycerophosphate Comp. Ampuls, 1 Cc. Squibb, each said to contain sodium glycerophosphate 0.1 gm., strychnin cacodylate 0.0005 gm., and iron cacodylate 0.01 gm., because the name did not indicate the potent ingredients and because the administration of a mixture of sodium glycerophosphate, strychnin cacodylate and iron cacodylate is irrational. In recognition of the Council's conclusion, Squibb and Sons state that the sale of the ampules has been discontinued. This cooperation in the work of the Council on Pharmacy and Chemistry is gratifying (*Jour. A.M.A.*, Feb. 3, 1917, p. 388).

Emetine in Dysentery and Pyorrhea.—Emetine is accepted today as an almost ideal specific against amebic dysentery. Experience indicates that by its use abscess of the liver can be prevented and even cured. When a differential diagnosis between amebic and bacillary dysentery cannot be made, emetine may be of diagnostic value because improvement follows from its use if the case is amebic. In neglected cases and some other forms of the disease the emetine treatment may fail of complete success. As a direct cure for pyorrhea emetine seems to have failed, not because it does not act on the ameba which are found in the pyorrheal pockets but because pyorrhea is not caused by ameba (*Jour. A.M.A.*, Feb. 3, 1917, p. 374).

Sargol.—In case of the United States against Wylie B. Jones and H. E. Woodward, proprietors of "Sargol" came to an end, January 30, 1917, after a trial lasting thirteen weeks. Jones was fined $20,000 and Woodward was fined $10,000. Sargol was a nostrum of the get-fat-quick variety; as an alleged "flesh builder" it was advertised extensively and intensively by its exploiters (*Jour. A.M.A.*, Feb. 3, 1917, p. 381; Feb. 10, 1917, p. 468; Feb. 24, 1917, p. 642).

More Misbranded Nostrums.—The following "patent medicines" were found misbranded under the U. S. Food and Drugs Act chiefly because false and fraudulent therapeutic claims were made for them: Collins' Ague Remedy, admittedly containing 33⅓ per cent. alcohol. Swaim's Panacea containing nearly 5 per cent. alcohol, 58.5 per cent. sugar, 0.1 per cent. salicylic acid and some sarsaparilla. Swayne's Panacea, essentially the same as Swaim's Panacea in composition. Croxone, capsules containing a white pill and a red oil: the oil was oil of pine or oil of juniper dissolved in a fatty oil, while the pill consisted essentially of strychnine, a trace of brucine, aloin, hexamethylenamin, lithium carbonate, potassium nitrate and probably a trace of atropin. Freeman's Balsam of Fir Wafers, lozenges consisting of sugar with very small amounts of oil of turpentine and eucalyptus with the possible presence of balsam of fir. Renne's Pain Killing Oil, essentially a water-alcohol solution of sassafras oil and cayenne pepper containing 78.6 per cent. alcohol and 4 per cent. volatile oils and possibly a little mustard oil and soap. Schuh's Yellow Injection, an aqueous solution of boric acid, carbolic acid and berberin. Schuh's White Mixture, a mixture of mucilage of tragacanth, balsam of copaiba, and probably sandalwood oil, flavored with cassia. Elmore's R'eumatine Goutaline, apparently a dilute tincture of colchicum. Armstrong's Croup Ointment, containing eucalyptus and traces of other oils, possibly cassia and thyme. Anticephalalgine, containing 30 per cent. alcohol and 4 grains acetanilid to the ounce, sodium bromid, sodium salicylate, caffein and antipyrin. Wright's Rheumatic Remedy, an emulsion composed principally of turpentine, methyl salicylate, sugar, acacia, and water, with probably some resinous or plant extractive matter. H. G. C., a watery solution of borax and berberin sulphate. Russell's White Drops, containing 13 to 16 per cent. of alcohol as well as codein. Pneumovita, a sweetened gum, containing small amounts of charcoal and iron phosphate having a wintergreen flavor. Mecca Compound, an ointment containing carbolic acid, camphor, borates, zinc compound, sodium soap in a soft paraffin base. Best Cough Remedy, a spearmint syrup containing alcohol, chloroform and morphin. Stella-Vitae, a female weakness remedy. Vegetable Pulmonary Balsam, a syrup flavored with spearmint, sassafras, containing alcohol and opium (*Jour. A.M.A.*, Feb. 17, 1917, p. 565 to 566; Feb. 24, 1917, p. 651).

Firwein.—The Council on Pharmacy and Chemistry, reports that Firwein (The Tilden Co.) is sold under the claim that when swallowed it has a "predilection" both for the bronchial mucosa and also for the genito-urinary organs. The Council finds that little information is given in regard to the composition of Firwein. As the composition of Firwein is secret, the therapeutic claims unwarranted and its use irrational, the Council declared it inadmissible to New and Nonofficial Remedies (*Jour. A.M.A.*, Feb. 17, 1917, p. 564).

Biniodol.—The Council on Pharmacy and Chemistry reports that Biniodol is claimed by the manufacturer, Charles C. Yarbrough, Memphis, Tenn., to be a solution of 1 per cent. mercuric iodid and 2.75 per cent. guaiacol in a vegetable oil and that it is marketed with the implication that it is new and superior to other oil solutions of mercuric iodid. The Council found that the claims of novelty and of superiority were not substantiated by the evidence. Clinical investigation did not demonstrate the effects of Biniodol to be different from those of solutions prepared in the A.M.A. Chemical Laboratory, with and without guaiacol. The Council declared Biniodol, inadmissible to New and Nonofficial Remedies because claims of superior efficiency were not established; and because it is an unessential modification of an established non-proprietary article marketed under a proprietary name (*Jour. A.M.A.*, Feb. 24, 1917, p. 650).